BY ORDER OF THE
SECRETARY OF THE AIR FORCE

AIR FORCE INSTRUCTION 23-201
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Supply

★*FUELS MANAGEMENT*

COMPLIANCE WITH AIR FORCE INSTRUCTIONS IS MANDATORY

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This instruction implements Air Force Policy Directive (AFPD) 23-2, *Supplies and Material Management*. It provides managers at all Air Force activities with policy and procedures for fuels operations. It applies to all Air Force activities, including US Air Force Reserve and Air National Guard units that receive, store, issue, quality control, and account for aviation fuels, ground fuels, cryogenic fluids, and missile propellants. Certain fuels accounts with a small mission may be exempt from certain provisions of this instruction with major command (MAJCOM) approval. If this instruction is in conflict with a technical order, the technical order takes precedence. Notify HQ USAF/LGSP should this instruction conflict with other Air Force instructions or directives. HQ USAF/LGSP will review the major command supplement (if required) before distribution.

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SUMMARY OF REVISIONS

This is the first publication revision of AFI 23-201. This revision reflects the changes which occurred due to discussions and ideas presented during "PETRO 95". The changes include QC&I evaluation requirements, training record inspection procedures, Forward Area Refueling and Rearming Point (FARRP) requirements, and cryogenics technical assistance.

Paragraph

Chapter 1—DUTIES OF THE BASE FUELS MANAGEMENT OFFICE (BFMO)

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OPR: HQ USAF/LGSP (CMSgt John Anaya)

Certified by: HQ USAF/LGSP (Col John H. Gunselman)
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Chapter 1

DUTIES OF THE BASE FUELS MANAGEMENT OFFICE (BFMO)

1.1. Objectives.
- Improve fuels management quality and capability.
- Ensure quality bulk petroleum products, cryogenic fluids, and missile propellants are issued safely and efficiently to using organizations.

1.2. Assigning the Responsible Officer. The supply squadron commander appoints an officer or civilian as Fuels Management Flight Commander (FMFC) who is the Responsible Officer IAW DoD 4140.25M, *DoD Management of Bulk Petroleum Products, Natural Gas, and Coal, Chapter 10.*

1.2.1. At bases with no FMFC, the commander appoints a senior 2F0X1 or 2F000 NCO, who has attended the Petroleum Logistics Management Course.

1.2.2. For contractor operated bases, Responsible Officers are not assigned. Care and safekeeping of government property is assigned to the contractor by contract IAW DoD 4140.25M, Chapter 10. In addition, the functional area chief (FAC) or quality assurance evaluator (QAE) may perform duties of a responsible officer (RO) provided they have attended the Petroleum Logistics Management Course.

1.3. Supporting War Plans. Managers with combat responsibilities must be familiar with AFMAN 10-401, *Operation Plan and Concept Plan Development and Implementation* and AFI 10-404, *Base Support Planning*, when preparing their war plans.

1.4. Managing Finances.

- Forecasts requirements for operation and maintenance (O&M) funds (expendable supplies, equipment, clothing, tools, temporary duty, training, and contract services).
- Keep accurate records and strict control of expenditures.

1.5. Conserving and Protecting the Environment. Appoint a Fuels Environmental Coordinator to:

- Follow federal, state, or local environmental regulatory requirements, and Air Force Policy Directives and Instructions. At overseas locations follow Final Governing Standards (FGS) or the Overseas Environmental Baseline Guidance document in the absence of the FGS.
- Consult with agencies (the Environmental Protection Committee, Base Environmental Manager, Base Civil Engineer (BCE), Base Bioenvironmental Engineer, and Staff Judge Advocate).
- See instructions in Attachment 10.

1.6. Submitting Military Construction (MILCON), Maintenance and Repair (M&R), Minor Construction (MC), and Environmental Compliance (EC) projects, Construction (MC), and Environmental Compliance (EC) projects, The FMFC:

- Reviews DD Form 1391s Military Construction Project Data, for POL MILCON, M&R, MC and EC projects prior to BCE forwarding to *MAJCOM Liquid Fuels Engineers, Programmers and Fuels Management Staffs.*
- Includes complete justification according to DoD 4140.25-M, Chapter 8.

1.6.1. MAJCOM Fuels Management will:

- Coordinate with MAJCOM engineers and programmers to prioritize the projects.
- Forward the prioritized projects to HQ DLA/DFSC with an information copy to HQ USAF/LGSP.

1.6.2. HQ USAF/LGSP represents the USAF on the DFSC-chaired Installation Planning and Review Board (IPRB) which prioritizes DFSC projects.

1.7. Obtaining Funding for Recurring Environmental Expenses IAW DoD 4140.25M.

1.7.1. The FMFC:

- Coordinates with the base environmental office and LSX to identify and determine annual recurring environmental expenses such as operating permits, sampling, testing, and disposal of petroleum wastes.
- Coordinates with base environmental office to determine environmental compliance actions and projects upon DFSC's semi-annual request for action.
- Must be aware of emergency funding reimbursement procedures for spill cleanup actions IAW DoD 4140.25M, Chapter 8, *DoD Management of Bulk Petroleum Products, Natural Gas and Coal.*

1.7.2. DFSC:

- Furnishes military inter-departmental purchase request (MIPR) for the estimated reimbursements and funds recurring environmental expenses IAW DoD 4140.25M, *DoD Management of Bulk Petroleum Products, Natural Gas and Coal.*

1.8. Reporting Fuel-Related Mishaps.

1.8.1. The BFMO:

- Reports mishaps according to the requirements of AFI 91-204, *Investigating and Reporting Mishaps* and AFI 32-4002, *Hazardous Material Emergency Planning and Response Compliance*, and to MAJCOM and DFO/DFR as soon as possible by telephone.

- Sends a follow-up message within 24 hours to the MAJCOM with an info copy to HQ USAF/LGSP, DFSC-FQ, and the applicable DFO/DFR.
- Sends an advisory message within 30 days to MAJCOM with an info copy to USAF/LGSP on the outcome of the investigation and lessons learned.
- Coordinates with the base environmental manager on follow-up messages for reportable fuels spills.

1.8.2. MAJCOM/LGSF:

- Notifies DFSC-FQ and HQ USAF/LGSP within 2 hours of notification from base level.
- Disseminates lessons learned as crossflow information within the Command and to other MAJCOMs.

1.9. Managing Inspection Discrepancies.

- Correct all deficiencies and eliminate their causes.
- Review all uncorrected vehicle and facility discrepancies monthly.When all options have been exhausted send a letter listing the discrepancies and requested action through the Chief of Supply to the supporting organization commander.

1.10. Controlling Personnel Quality.

- Interview personnel within 30 days after they arrive to ensure they meet the qualification requirements in AFMAN 36-2108, *Airman Classification.*
- Report discrepancies to the Military Personnel Flight.

1.11. Task Restrictions.

- Monitor individuals working more than 8 continuous hours at fuel/cryogenic handling operations for alertness and situational awareness.
- Do not allow untrained or uncertified fuels personnel to perform fuels and cryogenics handling operations without supervision.

1.12. Augmenting Personnel.

- Only task qualified personnel with Air Force Specialty Code (AFSC) 2F0X1 or sister service/country equivalent are allowed to conduct fuels or cryogenics handing operations. Non-fuels personnel may augment as the second person for two-man safety coverage (see para. 3.3.2)
- Ensure wing leadership understands operational implications of assigning fuels personnel to augment other base agencies.
- Personnel identified as FARRP operators will not be utilized for mobility taskings other than FARRP requirements.

1.13. Managing Contract Operations. Working through the contracting office:

- Perform a technical review of service contracts to ensure they provide quality fueling support.
- Coordinate all base fuels service contracts with MAJCOM Fuels Management.

1.13.1. Ensure the contract specifies:

- Training and qualification requirements are similar to those of AFSC 2F0X1.
- Spot check evaluations and recurring certification are similar to Air Force employees.
- Performance work statements that comply with this instruction.

1.14. Special Tools, Equipment, and Facilities. Items need not be separately possessed by fuels activities if available in close proximity to and available from refueling maintenance to allow joint use by both activities.

1.14.1. Requirements are specified in AS 488. As a minimum the following items should be located in or near the fuels management area.

- A vehicle wash rack equipped with an oil-water separator and located within or near the refueling unit parking area.
- A liquid degreasing machine capable of cleaning engines on mobile fueling equipment (make sure the discharge from the degreaser drains into an oil-water separator).
- A compressed air source.
- Twenty-ton capacity hydraulic jack.
- Pneumatic impact wrench.
- Approved static grounding post installed for grounding refueling equipment during product movement.
- Two 20-ton capacity jack stands.
- A multimeter.

1.14.2 Facilities.

- Fuels facilities are prescribed in AFI 32-1024, *Standard Facility Requirements*.

1.15. Using Hydrants. Hydrant systems are efficient and should be used to refuel and defuel large aircraft.

1.15.1. Surveying Hydrant Use. The wing commander:

- Directs a joint survey with members from Operations Group, Logistics Group, and Fuels Management to determine the optimum hydrant and mobile refueler use ratio. The survey should include manpower, equipment availability, and sortie rates.
- Approves goals for using hydrants.

1.15.2. Modification/Deactivation. Before modifying or deactivating inadequate hydrant systems, send a request to the parent MAJCOM. Include:

- Capability of existing system.
- Current and programmed fueling requirements.
- Rationale which includes maintenance cost savings or avoidance, possible use of tankage, and proposed method of fueling support.

1.16. Managing Organizational Fuel Tanks. Follow the procedures in AFI 23-204, *Organizational Fuel Tanks*.

1.17. Vehicle Fuel Servicing. Use the military service station when practical. During contingencies or exercises, service vehicles by mobile fueling units as required.

1.17.1. General Purpose Vehicles. These vehicles refuel at the base service station unless authorized an organizational issue tank or the FMFC approves refueling from mobile units. To get approval organizations must send a written request annually to the FMFC. The requests will include:

- The organization.
- The vehicle identification number.
- Type of vehicle
- Required grade of fuel.
- Reasons why the organization cannot use the base service station.

1.17.2. Special Purpose Vehicles. Use a mobile fueling unit to service special purpose vehicles and material handling equipment (MHE) that cannot easily travel to the base service station due to body design or locomotion method.

1.18. Using Fuel Servicing Units.

- See para. 5.12. for refueling equipment authorizations.
- Obtain MAJCOM approval to use aviation fuel vehicles to issue ground products for periods over 90 days.
- Obtain MAJCOM approval before fuel servicing units are utilized to assist in environmental clean-up operations.

1.19. Communicating With Operators.

- Establish two-way radio, voice, or telephone communications between pumping and receiving stations for all fuel transfers.
- Use dedicated circuits (hot lines), extra telephone circuits, or outgoing call restrictions to ensure telephone contact in an emergency. Provide a loud bell, gong, horn, or other signaling device outside and in high noise areas.

1.20. Using the Fuels Automated Management System (FAMS) or Fuels Automated System (FAS). You must use FAMS or FAS. Coordinate with the Chief of Supply to interface the applicable system and the Standard Base Supply System (SBSS).

1.21. Establishing Fuels Operating Instructions (FOI) and Checklists. If you write FOIs and checklists, assign individual identification numbers and review at least annually. Use the following guidelines.

1.21.1. FOIs:

- Write FOIs to provide local procedures.
- Do not duplicate guidance contained in other directives unless necessary to consolidate or emphasize.
- Designate the fuels operations that require the mandatory use of locally developed checklists.

1.21.2. Checklists:

- Write checklists in a simple, concise, and comprehensive manner.
- Keep them one page long, if possible.
- Include emergency action procedures.
- Make them bilingual, if necessary.

1.22. Maintaining Technical Orders (T.O.).
- Establish an independent T.O. account with the base technical order distributing office.
- Maintain those T.O.s required for individual base support requirements.
- Maintain additional T.O.'s required for training and deploying.

1.23. Reporting of Technical Data and Materiel Deficiencies.
- Identify any errors, contradictions, procedures requiring clarification, and materiel deficiencies following specific procedures in T.O.s 00-5-1, *AF Technical Order System*, and 00-35D-54, *USAF Materiel Deficiency Reporting System*. See T.O. 00-5-1 for specific guidance on preparing AFTO Form 22, Technical Order Improvement Report and Reply.

1.24. Obtaining Waivers to This Instruction. Send requests for waivers to your MAJCOM. Make sure each request:
- Explains all the circumstances.
- Defines the exact limits of the waiver.
- Specifies its duration.
- Describes alternate procedure and explain how it will ensure safety.
- Shows waiver request coordination.

1.24.1. MAJCOMs may waive provisions of this instruction for 90 days and send an information copy to HQ USAF/LGSP. HQ USAF/LGSP must approve waivers required for more than 90 days.

Chapter 2

DUTIES OF ORGANIZATIONS INTERACTING WITH THE BFMO

2.1. HQ USAF. The Directorate of Supply, Supply/ Fuels Policy Division (HQ USAF/LGSP):
- Establishes US Air Force policy for managing petroleum resources and energy conservation matters.
- Provides staff supervision to effectively implement the management concepts outlined in this instruction.
- Furnishes fuel storage and dispensing facilities justification. Reviews the military construction program to ensure adequate petroleum support of the worldwide mission.
- In coordination with HQ USAF/LGMM, approves waivers to T.O. 00-25-172.
- Validates MAJCOM-generated wartime fuel requirements.
- Develops petroleum budget estimates and accomplishes other financial and commodity management responsibilities.
- Provides representation and staff support to the Defense Energy Policy Council and the Office of the Secretary of Defense, Materiel and Resource Management Policy Directorate.
- Manages the Logistics Education Advancement Program (LEAP) and the Fuels Management Professional Enhancement Program (PEP) according to Attachment 3.

2.1.1. Fuels Management Steering Group (FMSG). The Chief of Supply/Fuels Policy Division chairs the FMSG, the primary forum to coordinate fuels policy. The Director of Aerospace Fuels, SA-ALC/SF, representatives from SSG/LGSF, the Fuels Training Division Chief at Sheppard AFB, fuels officer block instructor from Lackland AFB, each MAJCOM Fuels Management Division Chief and Senior Enlisted Manager attend the FMSG annually. Members:
- Discuss common fuels management problems.
- Plan and establish command asset priorities.
- Determine new equipment requirements.
- Discuss staffing needs.
- Discuss new changes, directives, and future developments.
- Recognize outstanding achievements.
- Plan energy conservation goals.
- Set fuels management goals.

2.1.2. Fuels Career Field Enhancement Conference (FCFEC). The Fuels Program Manager **c**hairs the FCFEC on an annual basis, prior to the FMSG to develop 2F0X1 career field policy and formulate proposals for presentation to the FMSG.
2.1.2.1. Attendees include:
- 2F000 CEM, CMS-selectees, and SMSgt's in CMSgt billets.
- An enlisted member from each MAJCOM not assigned a 2F000 CEM.
- An enlisted member from the Standard Systems Group (SSG/LGSF).
- The AFMPC fuels (2F0X1) functional representative.
- The fuels training division superintendent (Sheppard AFB).

- Logistics education advancement program (LEAP) personnel.
- Personnel (2F0X1) assigned to MAJCOM inspector general positions.

2.2. Defense Fuel Supply Center (DFSC). Acts as the worldwide integrated materiel manager (IMM) for wholesale bulk petroleum products IAW DoD 4140.25M.

2.2.1. In CONUS areas, DFO/DFRs monitor customer activity, capability, and operating practices.

2.2.2. In overseas areas, the Joint Petroleum Offices (JPO) of the unified commands provide assistance to DFSC and DFO/DFRs for IMM.

2.3. San Antonio Air Logistics Center (SA-ALC).

2.3.1. The Directorate of Aerospace Fuels, SA-ALC/SF.

- Submits procurement requests to DFSC.
- Ensures quality control on base and operates area laboratories.
- Performs facility and product service engineering.
- Performs cataloging.
- Provides technical guidance on environmental issues.
- Processes fuel transactions that are applicable to the Fuels Division, Defense Business Operating Fund (DBOF).
- Prepares budget data and financial programs.
- Publishes the Air Force Fuels Directory.
- Acts as the service control point for Air Force fuel requirements and inventory management.
- Assembles bulk aviation and ground fuel requirements and submits Military Interdepartmental Purchase Requests (MIPR) to DFSC.
- Submits requests for into-plane contracts to DFSC.

2.3.2. The Technical Division, Directorate of Aerospace Fuels Management (SA-ALC/SFT).

- Provides technical support and quality assurance for fuels and lubricants worldwide.
- Operates area aerospace fuels laboratories that provide testing services to bases on samples of fuels and related products.
- Arranges contract testing on an emergency basis at designated locations.
- Staffs the Air Force Petroleum, Oil, and Lubricants (POL) Technical Assistance Team which provides technical assistance to detect and correct deficiencies in products, handling procedures, and fuel systems.

2.4. Major Command (MAJCOM), Direct Reporting Unit (DRU), and Separate Operating Agency (SOA).

2.4.1. All MAJCOMs, DRUs and SOAs:

- Provide guidance to ensure that assigned units comply with this instruction.
- Review and validate fuels vehicle and equipment authorizations.
- Plan and program for fuels facilities required to carry out organizational responsibilities.
- Consolidate, validate, and submit fuels and missile propellant requirements.
- Promote supply, maintenance, security, and safety discipline in all fuels operations.
- Obtain quotas for technical training.
- Participates in energy conservation and energy security programs IAW The Air Force Energy Conservation Plan.
- Develop fuels support for war and contingency plans.
- Validate the *War Consumable Distribution Objective* (WCDO) document, and the *Inventory Management Plan* (IMP).
- Develops fuels wartime requirements IAW the IMP.
- Manages fuels mobility support equipment (FMSE) storage and training, and program funding for FMSE training.

2.4.2. MAJCOMs With Lead Responsibilities:

- HQ ACC--Refueling units, fuels mobility support equipment, ATHRS and ABFDS training programs, cryogenic production plants and cryogenic support equipment, such as purge units, vacuum pumps, and cryotainers.
- HQ AMC--Hydrant servicing vehicles and hose carts.
- HQ AFSOC--Forward Area Refueling and Rearming Point (FARRP) policy, equipment, training and mobility support.

2.4.2.1. Duties of Lead MAJCOMs:

- Work directly with key Air Logistic Command (ALC) personnel (program managers, item managers, and project engineers).
- Coordinate requirements with other MAJCOMs, consolidate specification requirements and purchase descriptions, and develop statements of work.
- Participate in critical design reviews, first article testing and system safety engineering analyses.

2.5. Chief of Supply (LGS).

- Resolves problems with maintenance of installed fuels facilities and equipment.
- Reviews fuels quality control inspection reports.
- Budgets, requisitions, and accounts for all deicing fluid, alcohol products, and packaged and drummed oils.
- Provides personal and safety equipment.
- Resolves problems with financial inputs, rejects, etc..

2.6. Base Civil Engineer (BCE).

- Maintains permanently installed fuels facilities and equipment. Provides 24-hour maintenance capability.
- Provides the Tab G-8, *Liquid Fuel Systems*.
- Provides detailed schematic charts and specific operating instructions for each pump house, bulk storage area, hydrant area, and service station.
- Provides base pipeline inventories (capacity in US gallons) and certified gauging charts (in 1/8-inch increments and US gallons) for each storage tank designated by fuels management.
- Paints marks, and color codes permanently installed fuel facilities, to comply with MIL-STD-101, *Color Code for Pipelines and for Compress Gas Cylinders*, MIL-STD-161 *Identification Methods for Bulk Petroleum Product Systems Including HydrocarbonMissile Fuels*, and AFOSH 127-44, *Safety Color Coding, Labeling, and Marking for Piping Systems*.
- Provides emergency power for fuels facilities according to AFI 32-1063, *Electrical Power Systems*.
- Provides or contracts vegetation control and grass cutting in fuels management areas (includes dikes and cut and cover tanks).
- Establishes a winterization program, removes snow, and prevents water accumulation in tank roof drains.
- Operates and maintains demineralized water plants. If contracted, the BCE contracts and funds demineralized water production and provides an adequate storage and truck fill capability.
- Inspects, cleans or deactivates tanks and removes tank bottoms and sludge.

  NOTE: Fuels management personnel do not assist in removing manhole covers or engage in any task associated with tank inspection or cleaning. See T.O. 37-1-1, *Operation, Inspection, and Maintenance of Permanently Installed Fuel Storage and Dispensing Systems.*
- Performs corrosion control on fixed facilities.
- Maintains a war reserve level on dispensing system filter elements.
- Provides a sunroof over liquid oxygen and liquid nitrogen storage tanks.

2.7. Transportation (LGT).

- Maintains vehicles, hose carts, mobile pantograph systems, FARRP equipment and FMSE (excluding bladders and seal drums).
- Accomplishes meter calibration, filter-separator element changes, hydrostatic hose testing, and other scheduled maintenance actions.
- Maintains, orders, and installs fuel couplers, connections, nozzles, strainers, decals, and related items.
- Accomplishes a corrosion control program on refueling equipment.
- Promptly responds to towing requests for inoperative fueling vehicles.
- Assists the fuels preventive maintenance checkpoint to correct minor discrepancies on the spot.
- Maintains a war reserve level on refueling equipment filter separator elements.
- Annually reviews vehicle depot maintenance requirements.

2.8. Aircraft Maintenance.

- Coordinates refueling support requirements and schedules maintenance activities to minimize any delay of refueling support during aircraft servicing operations.
- Furnishes the weekly aircraft utilization and maintenance schedule and promptly notifies the BFMO of schedule changes.
- Assists fuels personnel in positioning refueling equipment.
- Connects and disconnects nozzles and couplers
- Assists in filling liquid oxygen and nitrogen servicing carts.
- Establishes aircraft fuel servicing requests through the Command Post maintenance coordination function. Where more than one agency requests fuel servicing, the Command Post provides written servicing priorities for assigned, tenant, and transient aircraft.

- Parks or tows aircraft to hydrant outlets.
- Provides the reason for defuel, estimated quantity, and the fuel grade to the fuels control center.
- Prior to defuel, verifies the last grade of fuel serviced to the aircraft by checking AFTO form 781F, *Aircraft Maintenance Log*
- Segregates and recovers petroleum products drained from aircraft and support equipment.

2.9. Missile Maintenance. Forecasts and reports missile propellant requirements according to AFMAN 23-110, Volume I, Part Three.

2.10. Wing/Group/Organization Commanders.
2.10.1. See paragraph 1.15 for wing and group commander hydrant use responsibilities.
2.10.2. See paragraph 6.18 for the support group commander's responsibilities concerning the entry and exit control of petroleum transport vehicles.
2.10.3. See paragraphs 1.16 and 1.17 for the organization commander responsibilities concerning organizational fuel tanks and vehicle fuel servicing.

Chapter 3

IMPLEMENTING THE OCCUPATIONAL SAFETY AND HEALTH PROGRAM

3.1. Providing Protective Equipment and Personnel Clothing.
3.1.1. The FMFC budgets for and provides serviceable protective equipment to all fuels personnel. Protective equipment includes:
- Cold and foul weather gear.
- Ear plugs or ear protectors for high noise areas.
- Cream or soap to prevent dermatitis.
- Goggles and visors for eye hazard areas.
- Specialized gloves and aprons for handling hazardous materials.
- Respirators for entering toxic environments.
- Safety-toe boots.

3.1.2. The FMFC ensures:
- Rubberized foul weather gear, gortex uniforms, wool socks, wool glove inserts, or Arctic parka caps (where authorized) are available for use.
- Personnel receiving, storing, issuing, and sampling petroleum and cryogenic products wear protective clothing per AFOSH Standards 127-31 and 127-67, and T.O. 00-25-172. These items are allowed in AS 016.
- Fuels personnel wear reflective vests, arm bands, belts or other safety devices currently listed in AS 016.
- Emergency showers or eyewashes and spill clean-up materials are available.
- Safety observers wear the equipment or remain out of hazard range with the equipment immediately available.

3.2. Duties of the Fuels Safety Monitor. The FMFC appoints the safety monitor in writing to:
- Establish a safety program according to AFI 91-301, *The US Air Force Occupational Safety, Fire Prevention, and Health Program* and AFOSH standards.
- Provide section supervisors topics to present at daily safety briefings. Attends safety briefings on a random basis to check for effectiveness.
- Brief all fuels personnel at least once per quarter on safety matters. This briefing includes hazards, safety precautions, first-aid measures and off-duty seasonal hazards and precautions.
- Inspect the fuels management activity semi-annually using an AF Form 2420, *Quality Control Inspection Summary*,or computer product.
- Establish an effective hazard reporting system according to AFI 91-204, *Investigating and Reporting Mishaps*.

3.3. Two Person Policy.
3.3.1. The FMFC:
- Arranges work schedules so no person performs fuels handling operations alone.
- Frequently checks personnel to reduce the chance of accidents, and to provide quick assistance in the event of accidents.

3.3.2. A commercial contractor employee, aircraft maintenance technician, or any other individual knowledgeable of the hazards involved and corrective actions to take in an emergency acts as a second person when necessary. (See Para. 1.12.)
3.3.3. Two people must be present when:

- Servicing aircraft, including refueling, defueling, and hot refueling.
- Issuing fuel to an organizational tank, IAW AFI 23-204, *Organizational Fuel Tanks.*
- Entering a confined space IAW AFOSH standard 91-25, *Confined Spaces*.
- Gauging and sampling above ground tanks.

  NOTE: When gauging a floating roof tank from the roof, or when anyone descends to the roof, one person remains on the platform at the top of the tank shell. When required personnel must use a self-contained breathing apparatus when descending onto floating roof tanks equipped with geodesic domes. In gauging all other types of above ground tanks, one person remains on the ground. FMFC may request waiver authority from MAJCOM for exceptions. (i.e. low profile tanks)
- Generating or transferring cryogenic fluids.
- Transferring high pressure gases.
- Off-loading tank cars or tank trucks.
- Filling trucks, or returning fuel to bulk storage.

  NOTE: Does not apply when the fillstand and the truck are equipped with a dead man control and personnel maintain contact with the FCC.
- Transferring and receiving fuel. Requires one person at the transfer point and one person at the receiving point.
- Collecting fuel samples from pressurized refueling equipment or installed hydrant systems.

  NOTE: One person takes the sample and the second person in the general area is aware of the operation.
- Performing laboratory operations IAW AFOSH standard 91-38, *Hydrocarbon Fuels-General*

3.4. Preventing Fires.
3.4.1. Controlling Smoking Materials.

- Do not use spark or flame producing devices or smoke in any refueling unit, fuel pump house, fuel or cryogenics storage area, or laboratory (excluding flashpoint tester).
- Post and enforce smoking restrictions.
- The fire department designates smoking areas.

3.4.2. Controlling Static Electricity.

- The fuels safety monitor familiarizes personnel with the nature of static electricity and the hazards of static charges when handling fuels, as outlined in T.O. 00-25-172.
- Do not don or remove outer garments within the Fuels Servicing Safety Zone.

3.5. Laboratory Safety.

- Use specialized laboratory equipment.
- Fuels laboratory personnel must take precautions to ensure the area is safe for testing.
- See AFOSH Standard 91-38, *Hydrocarbon Fuels, General.*

3.6. Limiting Foreign Object Damage (FOD).

- Inspect all fueling equipment for foreign objects during the daily operator inspection.
- When operating vehicles on unpaved surfaces, inspect for, and remove foreign objects before traveling on the flight line.
- Do not drive fueling vehicles over “FOD shakers.”

3.7. Using Chocks. Chock all fuel servicing vehicles according to T.O. 00-25-172.

3.8. Marking Fuels Collection/Storage Containers. Mark all containers according to T.O. 42B-1-23.

Chapter 4

ESTABLISHING A THREE-PHASE SECURITY PROGRAM

4.1. Duties of the Security Monitor. The FMFC appoints the security monitor in writing to:

- Review security plans, programs and training, and recommend improvements.

- Provide all fuels personnel proper training in the three-phase program. Conduct training on arrival and annually thereafter.
- Conducts an information security program according to AFI 31-401, *Information Security Program Management.*
- Familiarizes fuels personnel required to enter or approach controlled or restricted areas with AFI 31-209, *Air Force Resource Protection Program,* and AFI 31-101, *Air Force Physical Security Program.*
- Consults the Base Resource Protection Committee concerning fuels facilities, equipment, and petroleum products protection.
- Instructs computer operators on computer security procedures outlined in AFI 33-202, *The Air Force Computer Security Program.*
- Institutes measures to secure fillstand servicing controls and fueling units required by T.O. 37-1-1.

4.2 Securing Fuels Facilities and Equipment:

4.2.1. When not attended, the BFMO locks:

- All access and dispensing points on ground fuel equipment. Secure sump and tank drains in a manner which prevents access to cargo tank contents.
- Dispensing pump nozzle handles or main power source, except on automated dispensing pumps.
- Gates of all fenced areas within fuels management control when areas are not staffed or under surveillance.
- Gauge hatches and other access points on all storage and hydrant tanks outside of protected (fenced) areas unless exempted by the Base Resource Protection Committee.
- Electrical control panels and bulk fuel off-loading systems outside protected areas.

4.2.1.1. Attach locks to a hasp, chain, handle, or other device of equivalent protective strength.

4.2.2. Establish proper key control. (Recommend magnetic locks for areas where climatic conditions are severe.) Obtain prior approval from the local Resource Protection Committee to use combination locks.

Chapter 5

DUTIES OF THE FUELS MANAGEMENT TEAM

5.1. Fuels Management Team (FMT). The Fuels Management Flight Commander (FMFC) and Fuels Manager/ Superintendent form a two-person team to:

- Manage the requisition, receipt, storage, issue, quality, and accounting of petroleum fuels; issue of demineralized water; and the requisition and accounting of missile propellants.
- Manage fuel servicing and cryogenic operations and ensure compliance with the aircraft servicing priority listing.
- Maintain bulk petroleum war reserve stock (BPWRS) and develop emergency fuel support plans.
- Validate all emergency war order (EWO), contingency and exercise plans requiring fuel support, when required by the unit mission.

5.2. Designed Operational Capability (DOC) Statements.

5.2.1. DOC Statement. Review the DOC statement to ensure the ability to provide the designated support requirements. The DOC is the baseline for Status of Resources and Training System (SORTS) reporting.

5.2.2. Unit Type Codes (UTC).

- See AFMAN 10-401, *Operation Plan and Concept Plan Development and Implementation,* on how UTCs are used in war planning.

5.2.2.1. UTC JFDES, Fuels Support Kit.

- All fuels management flights providing a UTC as part of a lead core unit must maintain a JFDES, fuels support kit.
- For standardization, the kit contains only those items identified in the Logistics Force Packaging Subsystem (LOGFOR).
- Deploy the kit with the initial support package required to support aircraft regeneration.
- Maintain any unit-unique or MAJCOM-directed items separately from the JFDES fuels support kit.

5.3. Preparing Required Reports.

5.3.1. Status of Resources and Training System (SORTS).

- Report IAW AFI 10-201, *Status of Resource and Training Systems.*

5.3.2. Preparing the RCS: HAF-LGS(AR)7108, *Bulk Petroleum Contingency Report (REPOL).* The REPOL report provides CSAF, HQ USAF/LGSP and the major commands with summary information on the damage and deficiencies affecting bulk petroleum supplies, storage and distribution systems, and supplements data in the CFMS database.

- Submit REPOL reports according to CJCSI 3150.14, *Joint Reporting Structure Logistics* or when requested by HQ USAF/LGSP.
- This report is designated emergency status code C1: Continue reporting during emergency conditions, priority precedence.
- Continue reporting during *MINIMIZE.*
- Provide equipment and personnel status in the report "Remarks" section.

5.3.3. Fuels Automated Management System - Command and Control (FAMS-C2).

- This report is designated emergency status code C1: Continue reporting combat fuels management (CFM) data during emergency conditions, priority precedence.
- Continue reporting during *MINIMIZE.*

5.3.4. Miscellaneous Reports

- HQ USAF/LGSP and MAJCOMs provide guidance for any other required reports to include after action/trip reports.

5.4. Developing an Alert Recall Plan.

- Prepare and distribute an alert recall plan.
- Develop an alternate notification procedure to use during a telephone communications failure.

5.5. Preparing Fuel Support Plans. Use AFPAM 23-221, *Fuels Logistics Planning*, as a guide when preparing fuels appendixes to the base war support plan, operation plans, and mobility support plans.

5.6. Reviewing the War and Mobilization Plan (WMP). Coordinate with logistics plans personnel to review the WMP to ensure you can support the aircraft activity listed.

5.7. Maintaining Bulk Petroleum War Reserve Stock (BPWRS).

5.7.1. Inventory Management Plan (IMP). Review IAW DoD 4140.25-M. MAJCOMs provide the bases their extract from the IMP.

5.7.2. Prepositioned War Reserve Materiel Stock (PWRMS) for Non Petroleum Products.

Refer to AFI 25-101, *Instruction for War Reserve Materiel.*

5.7.3. Penetration of Inviolate Levels. Report inviolate level penetrations exceeding a 72-hour period according to DoD 4140.25-M, *DoD Management of Bulk Petroleum Products, Natural Gas, and Coal.*

5.7.4. Maximum 1-Day Requirements: MAJCOMs will provide maximum 1-Day requirements to their bases using information from Fuels Requirements Analysis Tool. The FMT will:

- Assess supportability of these requirements by determining maximum receipt and issue rates.
- Report deficiencies using SORTS to parent MAJCOM.
- Submit a detailed analysis to parent MAJCOM detailing deficiencies, corrective actions and work arounds.

5.8. Fuels Facility Plan. Obtain updated liquid fuels system drawings, Tab G-8, from the BCE. Provide a current copy to parent MAJCOM during March of each odd year (i.e. 1997, 1999, etc.) and when major changes occur. Fuels managers must color code active facilities by product on drawings IAW clipboard color scheme described in attachment 9. Identify all major fuels facilities by name (i.e., FCC, LAB, RFM, etc.).

5.9. Maintaining Emergency Power Capability.

- Identify and coordinate emergency power requirements with BCE.
- Preposition emergency generators at bulk storage and hydrant facilities.
- Write procedures in emergency support plans to provide power when generators cannot be prepositioned.
- Train fuels personnel to operate emergency power generators according to AFI 32-1063, *Electrical Power Systems*.

  NOTE: Fuels personnel are not authorized to verify the emergency power generator wiring. BCE personnel will ensure the proper generator connection.

5.10. Operating a Fuels Radio Net. A separate radio net for the fuels management activity is required.

- Train fuels personnel on radio operation procedures and transmission discipline.
- Attachment 2 lists the radio transmission codes.

5.11. Facility Requirements. When developing or reviewing fuels facilities project requests, refer to Air Force Handbook 32-1084, *Standard Facility Requirements Handbook.* This handbook provides facility space allowance criteria by category code and its companion document, AFI 32-1024, *Standard Facility Requirements*, lists OPRs and provides an overview of the facility requirements system.

5.12. Computing Refueling Equipment Authorizations.

- Use the Air Force Automated Aircraft Servicing Capability Program to determine peacetime refueling vehicle authorizations IAW AFM 67-413, *Fuels Automated Management System.*
- Review authorized fueling vehicles, including WRM vehicles, every two years or when mission changes dictate, to determine if shortages or overages exist.
- Furnish a copy of the validation to the MAJCOM.
- Maintain source documents until the completion of the next validation.
- Refer to AS 012 for type and number of vehicles to accomplish various refueling operations.

5.13. Providing Covered Structure for Fueling Units. In cold weather and heavy snowfall areas, submit a work request for heated facilities to park fueling units.

5.14. Understanding the Management Engineering Program (MEP). See attachment 11 for general information on the MEP.

5.14.1. Fuels Functional Responsibilities in the MEP.

- Know the Air Force Manpower Standard (AFMS) for Fuels Management AFMD 41D1.
- Evaluate the number of people assigned to the fuels flight.
- Take action to identify personnel overages/shortages.
- Request manpower to accomplish the mission as necessary.

5.14.2. Taking a Proactive Role During the Manpower Standards Development Process.

- Know the study schedule.
- Provide recommendations to the functional review workshop.
- Review all study documentation such as work center description, measurement plan, and final report for accuracy and provide any corrections.
- Verify measurement data accuracy.
- Coordinate on manpower additives, exclusions, and deviations.
- Assist in developing work center productivity enhancements.
- Submit manpower change requests to local Command Management Engineering Team (CMET).
- Assist the CMET in assessing and validating wartime manpower requirements.

5.14.3. Monitoring the Unit Manpower Document (UMD) and Unit Personnel Management Roster (UPMR).

- Monitor the increases and decreases in the unit's authorized strength to ensure the authorized number of people is sufficient to do the job.
- Review the UPMR to ensure it reflects the people assigned against the number of positions authorized on the UMD.
- If there are errors, take corrective action.

Chapter 6

CONDUCTING FUELS OPERATIONS

Section A—Fuels Operations Supevisor

6.1. Duties of the Fuels Operation Supervisor.

6.1.1. Supervises the fuels control center (FCC), distribution, storage, cryogenics and propellants storage functions.

- Review aircraft flying schedules for fuels support requirements and tailor work shifts accordingly.
- Provide proper security, storage, and operator maintenance of assigned equipment.
- Submit requests for facility and equipment changes.
- Review QC&I evaluation reports and validate corrective actions.
- Report training requirements to the fuels training supervisor.
- Manage assigned vehicles.
- Establish product rotation procedures for hydrant and bulk storage facilities.

- Regularly use all tanks, transfer pipelines, pumps, meters, filter-separators, and fill stands to help prevent deterioration of pumps, seals, and gaskets.
- Exercise alternate resupply/receipt mode capability at least semi-annually on those modes which have not been used.

Section B—Fuels Control Center

6.2. Duties of the FCC Supervisor.

6.2.1. Maintain Current Fuels Operations Status:

- Use the Fuels Automated System (FAS) for all fuel servicing transactions or the AF Form 824, *Daily Fuels Request and Servicing Log.* Keep a backup copy of at least six months of data.
- Maintain close liaison with aircraft maintenance control concerning present and projected fueling requirements.
- Keep current product inventory status and monitor all product movements.
- List major BCE and vehicle maintenance actions which impact the mission.
- Inform the operations supervisor and refueling maintenance when the fueling unit in- commission status reaches the minimum level.
- Inform the operations supervisor and liquid fuels maintenance (LFM) when the facilities in-commission status reaches the minimum level.
- Notify affected base agencies of fuel servicing priority and schedule changes.
- Keep a list of vehicles and equipment which are authorized fueling unit service.
- Keep a list of trained organizational tank custodians authorized to receipt for fuels.
- Maintain the names of key personnel, including duty section and home telephone numbers.
- Display the flight line layout. The flight line layout normally shows all servicing locations.

6.2.2. Act as the single point of contact for the flight during other than normal duty hours. Establish procedures to ensure transfer of pertinent information to each shift supervisor and controller.

6.2.3. Request necessary support services from the fire department, vehicle maintenance, BCE, and the control tower.

6.2.4. Validate with QC&I sample requirements for equipment returned from refueling or liquid fuels maintenance.

6.2.5. Maintain current vehicle and equipment status and include:

- Vehicle or equipment type.
- Number assigned, minimum essential and number in-commission.
- Registration number.
- QC&I sampling status.
- Status (in or out) of service.
- Estimated time in commission (ETIC).

6.2.6. Maintain Minimum FCC Facility Standards:

- Indirect lighting, covered with acoustical material , and air/heat conditioning.
- Door with a lock, and a one-way, see-through mirror, when appropriate, for personnel identification and to prevent compromise of classified material.
- Standby power source.
- Designated backup facility (pump house, bulk storage, or other suitable facility) as an alternate FCC with emergency power. Equip the alternate FCC with the means to track fuel facility and equipment status.

6.2.7. Monitor Aircraft Generation Status:

- Display generation status, when required by the unit mission.
- Post required aircraft fuel servicing on a time sequence necessary to meet mission requirements.
- Coordinate changes with aircraft maintenance control.

6.2.8. Maintain the number and locations of emergency power generators. List the fuels personnel certified to operate these generators.

6.2.9. Effectively communicate using:

6.2.9.1. Radio Communication. Radios are the primary means of communication between the FCC and fuels operating activities.

6.2.9.2. Telephone Communication. The FCC requires immediate contact with maintenance operations control centers (MOCC) and positive control over all fuels facilities and flight line operations. Equip the FCC with at least three telephone lines:

- A “Class A” line.
- A “Class C” line.
- A direct line to MOCC.

6.3. Preparing for Disasters.

6.3.1. The FCC supervisor equips the FCC with:

- A standardized base grid map with all fuel facilities marked or highlighted for easy identification.
- A fuels alert recall roster.
- Disaster/emergency checklists or operating instructions.
- An alternate parking plan to relocate fueling equipment.

6.3.2. In event of an emergency, the FCC controller:

- Notifies each element in the fuels management flight, Chief of Supply, and Wing Command Post of simulated or actual disaster or other emergency incidents.
- Records the sequence of actions taken.

6.4. Issuing Servicing Clipboards.

6.4.1. The fuels controller issues servicing clipboards containing:

- AFTO Form 422, *Differential Pressure Log*.
- AF Form 1232, *Bulk Fuel Issue/Defuel Summary.*
- AF Form 1994, *Fuel Issue/Defuel Document (DoD).*
- AF Form 1995, *Fuel Issue/Defuel Document (Non-DoD).*

6.4.1.1. At time of dispatch provides the fuels operator:

- Grade of fuel.
- Refueling vehicle/equipment registration number.
- Authorized delivery point (such as the aircraft type and serial number or facility number.)
- Reason and the estimated quantity of defuel.
- An applicable fuel servicing T.O. checklist.

6.4.2. Marking Clipboards.

- Mark the clipboard front to indicate product, and vehicle/equipment registration number.
- Color code clipboards when handling more than one grade of aviation or ground fuel. (For example, a base handling JP8, MUR, and DF2 is not required to color code their aviation fuel clipboards, but is required to color code their ground products clipboards.) Use the color scheme found in Attachment 9.

6.5. Notifying of Weather Warnings. At bases without automatic weather warning equipment, the FCC supervisor formalizes a written agreement with the installation weather detachment, MOCC and base operations to receive weather warnings. The FCC supervisor or controller:

6.5.1. Notifies all fuels personnel of the weather warning.

6.5.2. Records all pertinent information such as thunderstorms, lightning, strong surface winds, heavy rains, and freezing precipitation.

6.5.3. Terminates fuels operations, to include commercial cryogenics receipts and issues performed outdoors, and bare base cryogenic plant operations when:

- Thunderstorms and lightning are within three miles.
- Other potentially hazardous conditions exist as determined by the base weather officer.

6.5.4. Do not terminate:

- Cryogenic production operations (product being introduced into base storage tanks/cylinders from the plant).
- Issues from the base service station.
- Commercial and DoD pipeline receipts.
- Vehicle movements (including refuelers).
- Pipeline transfer operations (including bulk storage to hydrant tanks).

6.5.5. The FCC controller informs all elements to resume operations and annotates the weather warning termination time.

6.6. Making Cash Sales.

- The FMFC provides the FCC a letter authorizing personnel to receive payments for cash sales of aviation fuel and oil.
- Refer to the guidelines in AFMAN 23-110, Volume I, Part Three, and AFI 23-202, *Buying Petroleum Products and Other Supplies and Services Off-Station*.

6.7. Controlling Keys.

- Keeps a spare set of keys for all locks securing fuels equipment and facilities except spare keys for padlocks used by the fuel QC&I personnel to prevent the use of equipment or facilities on quality control hold.
- When a spare is issued, replaces the spare key or recylinders the lock.

- Keeps ignition keys in fueling units and tractors for fuels or propellant transporters at all times.

6.8. Documenting Fuel/Cryogenics Activities:

6.8.1 The Fuels Automated System (FAS):

- Reflects fuel/cryogenics handling operations.
- Matches close-out times to the daily physical inventory periods.
- Is reviewed by the operations supervisor and forwarded to Fuels Administration.
- Is a source document to determine refueler and manpower requirements.

6.8.2. Using the AF Form 824,***Using the AF Form 824, Daily Fuels Request and Servicing Log*** and AF Form 839, ***Flightline Daily Fuels Service Log.***

6.8.2.1. The AF Form 824:

- Used in lieu of FAS when not available

6.8.2.2 The AF Form 839:

- Used when fueling equipment is prepositioned to service aircraft.
- Used for scheduled ground fuel deliveries.
- Identified as a single line entry in FAS/AF Form 824, and attached as a supporting document.

6.8.3. The administrative supervisor must have access to FAS data and AF Form 824s that were utilized to determine refueler and manpower requirements.

6.9. Duties of the Fuels Operations Expediter.

- Assists the FCC supervisor in coordinating and directing fuel servicing operations.
- Evaluates fueling operations, initiates action to correct deficiencies, terminates unsafe operations, and reports discrepancies.
- Maintains a tool kit for on-the-spot repairs and assists operators with problems.
- Provides assistance for hydrant servicing operations.
- Maintains close liaison with the FCC to report progress of operations and coordinate changes in scheduled work plans.

Section C—Fuels Distribution

6.10. Duties of the Fuels Distribution Supervisor.

- Supervises hydrant refueling, mobile refueling, and preventive maintenance.
- Assists the fuels operations supervisor in performing the duties listed in paragraph 6.1 and ensures actions directed by the FCC are accomplished in a safe and efficient manner.
- Establishes an effective daily preventive maintenance program to ensure maximum serviceability of all fueling equipment and facilities.
- Coordinates with BCE and vehicle maintenance on scheduled maintenance and deficiencies.
- Reviews aircraft flying schedules to ensure resources are available to accomplish fueling operations.
- Reviews all fuels documents fro accuracy and completeness daily, in coordination with the bulk storage supervisor.
- Spot-checks operator's preventive maintenance and vehicle checkpoint procedures.
- Reviews inspection records for permanently installed hydrant facilities (AFTO Forms 39, *Fuel System Inspection and Discrepancy Report*).
- Reviews AF Form 824 or automated equivalent daily and takes corrective action when necessary.

6.11. Duties of the Hydrant Supervisor.

- Operates and performs operator's maintenance of the hydrant system, hose carts, associated dispensing systems, pantographs, and hydrant servicing vehicles.
- Transfers fuel between the hydrant system and bulk storage.
- Establishes a hydrant system flushing program according to T.O. 37-1-1.
- Performs preventive maintenance inspection on hoses, hose trucks, pantographs, and hose carts. If more than 1 day has passed since the last inspection, inspects the equipment prior to use.

6.12. Duties of Mobile Refueling Supervisor.

- Coordinates with the fuels training supervisor for drivers' school training and ensures personnel are certified on the equipment.
- Initiates driver disqualification action when an individual's attitude, mental, or physical conditions are potentially unsafe for operating vehicles.

- Familiarizes refueling unit operators with flight line safety, aircraft parking ramps, runway crossings, aircraft taxiways, and control tower signals.

6.13. Duties of the Preventive Maintenance Supervisor.

6.13.1. Inspects refueling vehicles and equipment.
- Performs inspections each day the equipment is used.
- Inspects all equipment at least every 14 days.
- Uses the operator's inspection guide and trouble report.
- Removes unsafe or inoperable equipment from service and reports to vehicle maintenance for corrective action.

6.13.2. Coordinates with refueling maintenance to ensure all required equipment is turned in on time for scheduled and unscheduled maintenance inspections.

6.13.3. Trains personnel to properly inspect and record operator's inspection results on appropriate forms.

6.13.4. Reviews the vehicle operator inspection forms and checks each vehicle or piece of equipment before it is released for service.

6.13.5. Informs the FCC of equipment status.

6.13.6. Qualifies personnel to use authorized tools.

6.13.7. Establishes an effective mobile equipment corrosion control program.

6.13.8. Establishes a special purpose vehicle checkpoint.
- Use a team concept and assign specific tasks to team members. For example, one member operates the vehicle, another is placed in front of the unit and another to the rear.
- The team chief annotates the discrepancies on applicable forms.
- Team members take vehicles with discrepancies that are not waived or deferred, to the refueling maintenance shop.
- Inspect prepositioned or dispersed vehicles in place at the option of the FMFC.
- A vehicle checkpoint is not required at non-flying activities, but operator inspection is required according to applicable publications.
- A covered shelter is required at locations where inclement weather poses a hazard to personnel.

6.13.9. Performing Vehicle Precheck. In addition to the daily inspection each vehicle operator performs a precheck prior to vehicle use:
- Check the applicable vehicle inspection form to ensure the vehicle was inspected at checkpoint within the last 24 hours.
- Perform a "walk around" inspection of the vehicle, checking for damage, fluid leaks, and other obvious discrepancies such as flat tires.
- Do not move the vehicle if it fails the check.
- Report the discrepancy to the FCC and take corrective action per instructions.

Section D—Fuels Bulk Storage

6.14. Duties of the Bulk Storage Supervisor.

6.14.1. Supervises bulk storage, the service station, and cryogenics storage except when a separate cryogenics production section is authorized.

6.14.2. Receives, stores, transfers, inventories, and documents storage transactions of bulk fuels, bulk aviation oil, deicing fluid, methanol, anhydrous ammonia, liquid oxygen, liquid nitrogen, liquefied petroleum gas (LPG), compressed natural gas (CNG) and other FP products.

6.14.3. Takes visual samples during receipts.

6.14.4. Performs inspections and organizational maintenance on all bulk storage facilities and equipment.
- Records deficiencies or malfunctions on AFTO Form 39, *Fuel System Discrepancy and Inspection Record.*
- Obtains service call numbers from BCE and enters it on the AFTO Form 39.
- Obtains the BCE representative initials and dates the AFTO Form 39 when the deficiencies are corrected.
- Observes the condition and performance of installed filters, separators, and strainers.

6.14.5. Coordinates with the BCE on scheduled maintenance and tank cleaning.

6.14.6. Transfers fuel between bulk storage and hydrants.
- Coordinates the transfer by telephone or radio.
- Bulk storage and hydrant operators must remain at their posts for the entire transfer.
- Establishes contact every 10 minutes between the transfer and receiving points during the last 30 minutes of the estimated transfer time.

6.14.7. Takes inventories according to AFMAN 23-110, Volume I, Part Three.

6.14.8. Base Service Station. Maintain a service station to provide automotive gasoline and diesel fuel or alternative fuels for all authorized vehicles and equipment.

6.15. Preventing Fuel Commingling. The storage supervisor:

- Installs a lock control system when more than one grade of fuel is stored in the same area. A product selection device (different size couplers and nozzles) is an alternative to mechanical locks.
- Locks receiving points located outside a secure or fenced area.
- If the tank contains a common receipt/issue line, displaces the defueled product into the tank prior to fill stand use.
- Does not return fuel through gauging hatches.

6.16. Verifying the Condition of Fuel Tank Trucks and Cars.

6.16.1. The BFMO inspects tank trucks and tank cars for hazardous conditions before off-loading.

6.16.2. If hazardous conditions exist:

- Refuse the receipt.
- Notify the local traffic management officer, base safety officer, the base fire chief, the quality assurance representative and the base contracting officer.
- Document all refusals in writing within 24 hours according to AFMAN 23-110 Volume I, Part Three and DoD 4140.25-M,with an information copy to the parent MAJCOM and DFO/DFR.

6.16.3. Guidelines for Reporting Fuel Quality Discrepancies.

- FOB Origin Contracts: Notify the quality assurance representative and the DFO/DFR.
- FOB Destination Contracts: Notify the supplier, quality surveillance representative, and the DFO/DFR.
- DFSP Sourced Fuel: Notify the quality surveillance representative and the DFO/DFR.

6.17. Duties of the Cryogenics Supervisor.

- Receives, stores, transfers, inventories, and documents transactions of liquid oxygen (LOX) and liquid nitrogen (LIN).
- Establishes an effective cryogenics conservation program to minimize losses.
- Follows the sampling and testing program as prescribed by the 42B-series T.O.s.
- Establishes an aggressive safety program according to AFOSH Standard 127-67, *Liquid Nitrogen and Oxygen Safety*.
- Inspects the AFTO Form 134, *Aviator's Breathing Oxygen Servicing Trailer Log* (*Liquid/Gaseous*), on all oxygen-servicing trailers in use prior to servicing. See T.O. 42B6-1-1 for specific responsibilities on documentation of the AFTO Form 134, quality control requirements, and restrictions on filling servicing trailers.

6.18. Controlling Entry and Exit of Petroleum Transport Vehicles.

6.18.1. The Support Group Commander designates the authorized entry and exit gates for petroleum transport vehicles, and appoints personnel to serve as delivery escorts.

NOTE: Do not assign base fuels personnel as escorts.

6.18.2. Escorts.

- The Base Resource Protection Committee (RPC) determines the need for commercial fuel delivery vehicle escorts.
- Vehicle escorts are trained on the actual operation they are expected to perform.

6.18.3. The BFMO:

- Inspects all incoming petroleum transport vehicles according to AFMAN 23-110, Volume I, Part Three, and reinspects each vehicle before it leaves the installation. Vehicles delivering fuel to the base exchange service stations or aero clubs are not inspected.
- Verifies at least two copies of an appropriate receipt or delivery document reflect the date, time inspected, and signature of the inspectors who perform both the incoming and outgoing inspections. Provide one copy to the carrier and file one copy in the fuels administration office with reference documents.
- Conducts random spot checks of contractor petroleum transport vehicles making single and multiple fuel delivery drops to government tankage outside of fuels management bulk storage areas.
- Conducts vehicle escort training, and documents according to AFI 23-204, *Organizational Fuel Tanks.* Verify tank escorts or custodians are supervising and receiving deliveries according to AFI 23-204.

Section E—Missile Propellants

6.19. Managing Missile Propellants.

- The propellants supervisor takes precautionary measures to reduce potential hazards such as fires, explosion, and toxic reactions.
- At those locations supporting Titan II missiles, the BFMO is responsible only for item accounting of missile propellants. Missile maintenance accomplishes all handling and quality control.

Section F—Cryogenics

6.20. Duties of the Cryogenics Production Supervisor.

- Reports directly to the FMT.
- Monitors maintenance forms data to ensure procedural compliance and takes necessary corrective action.
- Conserves cryogenics.
- Establishes a supply account for cryogenics operations.
- Coordinates on all base projects pertaining to cryogenic products.

6.20.1. The FMT:

- Assigns only personnel with SEI 037 as the cryogenics production supervisor.
- Assigns Special Experience Identifier IAW with Attachment 7.

6.21. Equipment and Facilities Used in Cryogenic Production.

6.21.1. Cryogenic Production Plants. MAJCOMs determine plant requirements based on current and programmed cryogenics support requirements and available base facility support. Various types and sizes of plants are authorized in AS 488. The BFMO coordinates plant approval, plant locations, arrangements, and requirements with the parent MAJCOM. Base Supply stores and issues gas cylinders according to 42B-series T.O.'s and applicable supply manuals.

6.21.2. Support equipment available to the BFMO and cryogenic facility requirements are found in Attachment 6.

6.21.3. The BCE maintains the facility, the installed property, and required utilities. The BCE forwards site selection for cryogenics storage or generating facilities to the MAJCOM civil engineer for approval with an info copy to MAJCOM fuels office.

6.22. Inspecting and Operating Cryogenic Plants.

6.22.1. Inspecting Equipment. The cryogenics production supervisor inspects production plants according to applicable 36G1-series T.O.s and records maintenance on AFTO Form 244, *Industrial/Support Equipment Record,* according to T.O.'s 00-20-1 and 00-20-7.

6.22.1.1. Reflect condition status, when inspections are due and completed, items due for replacement, and discrepancies noted with corrective action taken.

6.22.1.2. When required, use published checklists or work cards.

6.22.1.3. Record hourly plant readings on AFTO Forms 385 or 386, *Daily Operating and Maintenance.*

- Review these forms daily.
- Use T.O. 00-20-7 to explain the status symbols.
- Use the AFTO Form 95, *Significant Historical Data*, with generating and support equipment.

6.22.1.4. Color code production plants and facilities according to Attachment 5.

6.22.1.5. The FMFC designates in writing personnel authorized to clear "Red X" conditions.

6.22.1.6. Calibrating Temperature and Pressure Gauges.

- Zero out and check gauges for accuracy in conjunction with equipment inspections.
- Document calibration or non-calibration by the owning activity according to T.O. 00-20-7.
- Refer to T.O. 33-1-1 for the list of gauges requiring PMEL calibration by part number.

6.23. Maintaining Equipment.

6.23.1. Cryogenics personnel:

- Perform daily organizational maintenance.
- Perform all inspections, lubrications, and routine adjustments of equipment.
- Perform intermediate maintenance of all production plants and equipment to include repair or replacement of major assemblies and components.
- Are familiar with the Air Force Cryogenics Technical Assistance team identified in attachment 13.

6.23.2. Obtaining Authority for Depot Maintenance.

- When equipment maintenance requirements exceed the base capability, the BFMO first considers contract maintenance.
- If contract maintenance is not available, the BFMO contacts MAJCOM/LGSF who, in turn, contacts SA-ALC/LDEA to determine a course of action.
- MAJCOMs will authorize base-level activities to contact SA-ALC/LDEA.
- The BFMO requests a depot maintenance assistance site visit (see T.O. 00-25-107) through the MAJCOM only as a last resort.

6.23.3. Equipment Modifications. Only qualified maintenance personnel modify equipment, when authorized by TCTO or at item manager direction.

6.23.4. Materiel Improvement Program. Report materiel deficiencies on all production and product storage equipment according to paragraph 1.23.

6.24. Maintaining Cryogenics Storage Tanks.

6.24.1. The cryogenics supervisor:

- Performs maintenance. Performs maintenance.

NOTE: Only qualified personnel are authorized to operate or handle any equipment involving cryogenics fluids.

- Submits work requests for corrosion control and painting.
- Submits requests to modify storage containers through the parent MAJCOM and item manager.
- Maintains a vacuum on all storage tanks at the lowest obtainable level.
- Checks tanks every 180 days (more frequently if losses are above allowable limits) with a portable efficiency meter to ensure loss rates do not exceed the limits in T.O. 37C2-8-1-116WC-1.
- Uses the portable dual efficiency meter readings to identify storage tanks requiring evacuation of annular space or additional annular space insulation.
- Reports tanks that cannot efficiently store product to the MAJCOM.
- Checks empty, serviceable containers every 90 days to insure they do not exceed T.O. 37C2-8-1-116WC-1 vacuum limits.

6.24.2. Servicing Cart Operation and Maintenance.

- Using organizations maintain cryogenics servicing carts to include purging and pulling the vacuum.
- BFMO will not fill carts that do not meet safety or operating conditions.

6.24.3. Maintaining War Reserve Tanks. The BFMO:

- Verifies storage tanks held in war reserve status are completely serviceable.
- Maintains an overboard vent systems (OVS) for each 400-gallon cryogenic tank listed in the units DOC statement according to T.O. 37C2-8-1-127.
- Stores the OVS in a locked box or foot locker, and inventories annually.

6.24.4. Preparing Air Transportable Cryogenic Storage Tanks for Shipment. The cryogenics supervisor:

- Affixes an approved static grounding reel on the 400 gallon air transportable cryogenic storage tank when the tank contains liquid.
- Consults T.O. 37C2-8-1-127 for instruction on the overboard vent system, when 400 gallon cryogenic storage tanks are loaded on aircraft for deployment.

6.24.5. Painting and Marking Cryogenics Storage Containers. The cryogenics supervisor:

- Paints, marks and maintains corrosion control on containers IAW T.O. 35-1-3 and Air Force Drawing 754532.
- Centers decals and position time compliance T.O. markings according to applicable publications.
- Requisitions decals directly from 651 SPTG/MSIPT, 3060 405 Fickle Street, Suite 1, Kelly AFB, TX 78241-6111. Locate decal part numbers in the applicable storage container -4 T.O. illustrated parts breakdown (IPB).

6.24.6. Operating Cryogenics Semitrailers. The storage supervisor:

- Operates vehicles over public roadways with two or more personnel, of which one will be fully qualified in handling cryogenic products.
- Ensures the vehicle complies with Interstate Commerce Commission and Federal/State Department of Transportation requirements.

6.25. Reducing Cryogenics Losses. The cryogenics supervisor:

- Limits the fill periods to the minimum number required to effectively support mission requirements by coordinating a cart-filling schedule with using organizations.
- Fills only those carts actually required for aircraft servicing. Encourages using organizations to keep active carts to a minimum, and maintain other carts in a purged, standby status.

- Keeps active tanks as full as economically possible.

6.26. Performing Quality Control. Cryogenics operators accomplish required on-line product tests and record results on production forms prescribed by the applicable plant T.O.s.

6.27. Obtaining Supply Support.
- The BFMO initiates requisitions for plants or tanks on AF Form 601, Equipment Action Request, according to AFMAN 23-110**.**
- See attachment 12 for supply support options.

Chapter 7

ACCOUNTING FOR FUEL

Section A—Fuels Accounting

7.1. Establishing the Accounting Function. The FMFC:
- Staffs fuels accounting with a minimum of one graduate of the AETC formal accounting school.
- Assigns special experience identifier (SEI) 040 IAW Attachment 7.
- Ensures the fuels accountants are familiar with basic stock fund operating principles and procedures set forth in DoD 4140.25-M, *DoD Management of Bulk Petroleum Products, Natural Gas, and Caol*, AFMAN 23-110, *Standard Base Supply System (SBSS),* and AFM 67-413, Vol. 1, *Fuels Automated Management System (FAMS) End User Manual.*

  NOTE: The Fuels Automated System (FAS) will replace FAMS and the Defense Fuels Automated Management System (DFAMS).

7.2. Duties of the Fuels Accounting Supervisor:
- Maintains fuels accounts according to applicable manuals.
- Uses FAS/FAMS to collect, store, and process all fuels transactions.
- Submits data to the DFAMS according to DoD 4140.25M, *DoD Management of Bulk Petroleum Products, Natural Gas, and Caol*
- Provides the current inventory status of all products and other pertinent information on receipts, storage, and issue transactions and ensures stock availability to support peacetime operating stock (POS) and bulk petroleum war reserve stock (BPWRS)
- Complies with suspense controls on rejects and management notices from SBSS.
- Maintains a document control function for fuels documents and transactions processed according to AFMAN 37-139, *Records Disposition Standards*.
- Coordinates with using organizations for requirements forecasting.

7.3. Selling Aviation Products to Contract Charter and Civil Aircraft. AFI 23-202, *Buying Petroleum Products and Other Supplies and Services Off- Station*, identifies specific guidance for sale of aviation fuel and oil to contract, charter, and civil aircraft. The FMFC:
- Appoints personnel in writing authorized to collect cash obtained from these sales.
- Provides for the safekeeping of cash according to AFI 31-209, *Air Force Resource Protection Program*.

  NOTE: Off-duty personnel cannot safeguard money collected for cash sales of aviation products.

7.4. Accounting for Special and Missile Fuels.

7.4.1. Accounting for Special Fuels. SA-ALC/SF provides the BFMO procedures for handling special fuels.

7.4.2. Accounting for Missile Fuels. The accounting supervisor:
- Accounts for propellants, oxidizers, pressurants, and related items according to AFMAN 23-110, Vol. I, Part Three.
- Funds these products under the missile fuels management category, Fuels Division, Air Force Stock Fund.
- Maintains missile and special fuels accountability off-line from the SBSS computer systems.

7.5. Accounting for Liquid Oxygen and Liquid Nitrogen. Fuels accountants account for liquid oxygen and liquid nitrogen according to AFMAN 23-110.

7.6. Accounting for Demineralized Water and Environmental Fluids.

7.6.1. Fuels Accountants:

- Maintain accountability of these products off-line from the SBSS computer systems.
- Prepare accounting records documenting receipts, issues, and inventories of demineralized water, environmental fluids, and deicing fluid.
- Consolidate issues from the AF Forms 824 and record them along with receipt or production data on AF Form 1237, *Inventory (Fuels/Missile Propellants),* to determine inventory status.

7.6.2. Fuels Control Center (FCC) Personnel:

- Record individual issues to aircraft on AF Form 824, *Daily Fuels Request and Servicing Log*, or Air Force Automated FCC Program, in lieu of using AF Form 1994, *Fuel Issue/Defuel Document.*
- Reflect the rated capacity of the aircraft tank or the average issue quantity based on historical data for non-metered issues.

Section B—Section Administration

7.7. Duties of the Fuels Administrative Supervisor:

- Prepares and maintains all formal correspondence and ensures proper distribution of all correspondence, reports, publications, and forms.
- Acts as the control point for maintenance of all publications, directives and technical orders (T.O.s). Attachment 4 is a list of major T.O.s and ASs related to the fuels career field.

Chapter 8

IMPLEMENTING A QUALITY CONTROL AND INSPECTION (QC&I) PROGRAM

Section A—The QC&I Function

8.1. Minimum Training Requirements. The FMFC:

- Will not allow fuels laboratory technicians to perform laboratory tests, work with chemicals, or use laboratory equipment unsupervised until they have received "hands-on" training and pass qualification training.
- Staffs the fuels laboratory with a minimum of one graduate of the Fuels Quality Control Course.
- Provides at least 30 days lab familiarization training prior to attending the Fuels Quality Control Course.
- Initiates action to assign Special Experience Identifier (SEI) 039 upon graduation and completion of 6 months laboratory experience.

8.2. Duties of the QC&I Supervisor. The QC&I supervisor manages the fuels laboratory, the inspection function, and the danger tag program.

8.2.1. Reviews laboratory reports to ensure fuel meets quality standards and to identify any significant trend patterns. Recommends changes to improve product quality, assists fuels element supervisors to improve procedures, and advises management of needed improvement.

8.2.2. Documents all fuel/cryogenic sampling and sample due dates on the FAS/FAMS.

- Maintains backup data IAW AFM 67-413, Vol. I.
- Uses the AFTO Form 150, *Base Fuels Sampling and Testing Record*, at deployed locations if automation is unavailable.

8.2.3. Danger Tag Program. The QC&I Supervisor:

- Informs the FCC when an AF Form 979, *Danger Tag*, is placed or removed.
- Records all danger tags in FAS/FAMS.
- Maintains backup data IAW AFM 67-413
- Uses an AF Form 980, *Caution Tag*, on refueling equipment and facilities that are overdue quality control sampling.

8.2.4. Establishing Sampling and Testing Requirements and a Laboratory Correlation Program.

- Establish sampling requirements and a laboratory correlation program according to T.O. 42B-1-1.
- Qualified personnel not assigned to the fuels laboratory may draw samples for local base tests when required.

- QC&I personnel pull all correlation samples for area laboratory testing.

Section B—Base Fuels Laboratory

8.3. Establishing a Fuels Laboratory Function.

8.3.1. The BFMO:

- Establishes a base fuels laboratory, equipped for limited tests to evaluate the cleanliness of fuel and fuel-handling systems, for each base handling aviation fuel.

  NOTE: The area fuels laboratory conducts full specification tests to determine chemical and physical properties of a product.
- Uses AFI 32-1024, *Standard Facility Requirements,* and AFOSH Standard 91-38, *Hydrocarbon Fuels-General,* to identify laboratory facility criteria.
- Equips the laboratory to perform the tests specified by 42-Series Technical Orders for all products handled. Refer to AS 460 for fuels laboratory equipment.

8.3.2. MAJCOMs:

- Approve variances to laboratory criteria with coordination from HQ AFSA/SEG.
- Approve fuel analyses performed anywhere other than a qualified base laboratory facility.

8.4. Handling Contaminated and Off-Specification Fuel Products.

8.4.1. QC&I Personnel:

- Immediately notify the FMT, and FCC of any suspected contaminated or off-specification fuel.
- Immediately remove fuel stocks, equipment, and facilities from service, danger tag, and lock to prevent product use.
- Test samples to determine the problem and its cause.

8.4.2. The FMT:

- Informs the Chief of Supply and other affected agencies when mission support capability is reduced.
- Immediately notifies the applicable DFO/DFR Quality Section and the assigned Quality Surveillance Representative.
- Advises the MAJCOM via telephone within 2 hours, and follow up by message within 24 hours of occurrence.

8.5. Crashed Aircraft Fuel Samples.

8.5.1. QC&I personnel pull all fuel samples associated with aircraft incidents and submit samples according to T.O. 42B-1-1.

8.5.2. Crash Sampling Kit. The QC&I personnel:

- Refer to T.O. 42B-1-1 for the mandatory kit items.
- Inventory and inspect the kit for cleanliness and serviceability annually, then seals it to prevent removal of equipment.
- Perform a semi-annual check to ensure the seal is intact.
- Reinspect the kit if there is any evidence of tampering.

Section C—Evaluations

8.6. Evaluation Guidelines. The QC&I supervisor may refer to the inspection checklist in AFMAN 23-110, *Standard Base Supply System,* Vol. 1, Part one, Section C. This checklist may be supplemented by MAJCOMs/Units for local conditions to evaluate the following:

- Management effectiveness.
- Accounting and administration procedures.
- Operator performance.
- Ground safety and fire prevention.
- Environmental compliance.
- Corrosion control.
- Care of equipment and facilities.
- Training.
- Procedures for product quality.

8.7. Performing Internal Evaluations.

8.7.1. QC&I supervisor:

- Evaluates each element, except its own QC&I function, at least once each six months (not to exceed 180 days).
- Revisits after 30 but within 45 days to check each negative indicator found during the semi-annual.

- Perform at least 10 no-notice spot checks each week. At bases with less than 20 full-time fuels personnel perform at least two no-notice spot checks per week.
- Spot check all shifts.
- Conduct spot checks during exercises and contingencies.

8.7.2. The FMFC designates an evaluator to perform a semi-annual assessment of the QC&I element.

8.8. Conducting the Evaluation. The evaluator:

8.8.1. Advises the section supervisor of the process to be evaluated, items of concern, and negative indicators from the last assessment.

8.8.2. Stops the operation and notifies the immediate supervisor and the FMT if a major safety violation is found, such as:

- No one has identified, withdrawn from use, or properly danger tagged equipment or facilities that are unsafe or hazardous.
- Any person commits a safety violation that could reasonably be expected to result in injury to personnel or damage to aircraft, equipment, or facilities.

8.8.3. Discusses all positive and negative indicators, to include root causes and corrective action, with the element supervisor.

8.8.4. Identifies processes with negative trends. “Negative trends”, will be defined by the FMT.

8.9. Evaluation Assessment Criteria. MAJCOMs will establish the assessment criteria.

8.10. Preparing and Routing the Report.

8.10.1. The QC&I supervisor:

- Prepares and routes the reports to the applicable element supervisor and chain of command.
- Carries forward open items to the next report.

8.10.2. The element supervisor:

- Replies to each negative indicator/trend stating the cause and corrective action taken to prevent recurrence. Provides action plan, annotates the word “OPEN,” and the anticipated completion date on all items that cannot be immediately corrected.

8.10.3. Each reviewer verifies the corrective actions.

8.10.4. If the evaluator observes a negative indicator for which an outside agency is responsible, the FMT informs the agency and routes the report through the Chief of Supply to the chief of the agency.

Chapter 9

SUPPORTING MOBILITY

9.1. Duties of the Fuels Mobility Support Supervisor. At centralized storage and training bases, the FMFC establishes a Fuels Mobility Support Element. This element supervisor:

- Identifies fiscal year mobility support funding requirements to the Chief of Supply’s resource manager.
- Performs operator maintenance on mobility equipment.
- Maintains technical orders and records of Fuels Mobility Support Equipment.
- Prepares and processes equipment for deployment.
- Coordinates with transportation, supply, and personnel functions to meet MAJCOM deployment time frames.
- Performs unit mobility monitor responsibilities listed in paragraph 9.7.
- Maintains records of all FMSE transactions. (i.e. maintenance, inspection, salvage, and transfer of equipment).

9.2. Managing Fuels Mobility Support Equipment (FMSE).

9.2.1. MAJCOMs storing FMSE:

- Designate storage bases, prescribe command reporting, and administer a management program.
- Calculate FMSE personnel and equipment requirements to support current planning guidance.
- Designate and maintain training ratio of 2.6 operators per ABFDS requirement.
- Programs for fiscal year funding through LGX, to include monies for 3K, 10K, and 50K bladders.
- Develop procedures to obtain upfront money for reconstitution.

9.3. How To Store, Maintain, Inspect, and Deploy FMSE and FARRP Equipment.

9.3.1. All BFMOs will:

- Store all equipment inside. In allocating inside storage, give priority to rubber products and filter-separator elements. Where inside space is not adequate, use outside covered storage. In both cases, provide dust covers for all openings in valves,
- Store bladders (except ABFDS bladders) in R14 cradles or wooden crates.
- Store ABFDS bladders flat according to T.O. 37A9-3-7-1.
- Store and maintain FARRP equipment IAW T.O. 37A9-7-2-1.

9.3.2. MAJCOMs and BFMOs provide recurring inspection and maintenance for all assigned equipment.

- Use T.O. 37A-1-101 for operation, servicing, and maintenance of air transportable fuels systems.
- Use T.O. 37A9-7-2-1 for operating, servicing, and maintaining FARRP equipment.

9.3.3. To prepare FMSE or FARRP equipment for deployment:

- Inspect equipment.
- Charge the batteries, run engines, visually inspect 10K and 50K bladders, and place bladders in slings.
- Inspect and leak check ABFDS bladders according to T.O. 37A9-3-7-1.
- Inspect and prepare FARRP equipment IAW T.O. 37A9-7-2-1.
- Prepare the equipment for shipment IAW AF JMAN 24-204, *Preparing Hazardous Material for Military Air Shipment.*

9.4. Setting Up FMSE.

9.4.1. Use AFPAM 23-221, *Fuels Logistics Planning*, for executing fuel support operations particularly at other than main operating bases.

9.4.2. Locate and install FMSE based on:

- The airfield layout and type of supported aircraft.
- The resupply source.
- Aircraft taxi or tow capability.
- The layout of roads and water channels.
- Other facility limitations.

9.4.3. Use PMU-27 service station set-up to support ground fuels.

9.4.4. Site cryogenics facility to minimize the travel time and distance flight line servicing units move for refilling; provide accessibility for tank truck deliveries; and comply with distance criteria of AFI 91-201, *Explosive Safety Standards.*

9.5. Using FMSE or FARRP for Exercise Support.

9.5.1. For activities planning to use FMSE for any reason other than OPLAN taskings, review the constraints of AFI 25-101, Chapter 6, *Instructions for War Reserve Materiel.*

9.5.1.1. Submit requests to parent MAJCOM Fuels Management Office with info to HQ USAF/LGSP and HQ ACC/LGSSF.

9.5.1.2. Activities submitting requests must:

- Provide 10 working days advance notice.
- Provide purpose of intended use.
- Use unit type codes (UTCs) to identify equipment and quantity when possible. UTC's may be tailored to suite the using organizations requirements.
- Provide the in-place date at deployment location and length of loan.
- Provide the full name, unit of assignment, and DSN phone number of the person(s) responsible for receiving, maintaining, and returning the equipment.
- List fund cites for transportation, FMSE reconstitution, and TDY of operator personnel IAW AFI 25-101, *Instructions for War Reserve Materiel*, when requested.

  NOTE: Reconstitution will include the "up front" expense of associated MRSP's, fuel bladders, batteries, and any other items that will require maintenance, repair, or replacement.
- Forward special transportation information. Dedicated airlift is the preferred mode of transport.
- Provide complete address of deployment location and on-site point of contact telephone numbers.

9.5.2. Using FARRP

- For exercises involving FARRP operations over 24 hours in duration, submit notification to HQ AFSOC/LGRSWF within 24 hours of tasking.

9.6. Establishing ATHRS, ABFDS and FARRP Operational and Training Requirements.

9.6.1. ABFDS and FARRP operators:

- Are qualified fuels specialists, AFSC-2FOX1, TSgt and below.
- Must meet Class III flying duty qualification standards.

9.6.2. ABFDS and FARRP operators must complete the following:
- Flight Physical
- Physiological Training
- Small Arms Training (9MM)
- Chemical Warfare Training.
- Fire Extinguisher Training.
- Aircraft Ground Egress Training.

NOTE: If formal training is not funded, ABFDS operators will be briefed by the aircrew prior to the flying mission on egress procedures.

9.6.2.1 Additional FARRP training requirement.
- Night Vision Device Training.
- Intelligence training (ISOPREP).
- Life Support Equipment Training.

9.6.3. FMT should consider FARRP operators for the following additional training, however, it is not required for qualification or certification:
- Water Survival Training.
- Combat Survival Training.
- ATHRS training.
- ABFDS training.
- Hazardous Cargo Training.
- LOX/LIN servicing.

9.6.4. Awarding SEIs. The FMFC awards SEIs based on the following criteria:
- ABFDS (SEI 369) and ATHRS (SEI 387) personnel must meet requirements IAW AFMAN 36-2108, *Airman Classification.*
- FARRP (SEI 035) personnel must be assigned to a fuels flight with a FARRP operation, completed and certified on all requirements listed in Para 9.6. and be actively participating in FARRP operations.

9.6.5. The supply squadron commander, using AS 016, Part B, ensures ABFDS and FARRP specialists receive the personal equipment in attachment 8.

9.6.6. The Base Hospital issues ABFDS/FARRP operators prescription glasses according to AFI 44-117, *Ophthalmic Services***.**

9.6.7. Allocating Flying Hours.
- Squadron Commanders forecast annual ABFDS crew flying hour requirements IAW AFI 11-402, Chap 6.
- The home station aircrew training and resource manager publishes aeronautical orders for the ABFDS crew.
- ABFDS operators have flight records maintained by designated host operations management (HOSM).

9.7. Duties of the Unit Mobility Monitor. The FMFC appoints in writing a fuels mobility monitor. (It is not required to appoint a mobility monitor if the base is a FMSE storage or training site.) The mobility monitor :
- Evaluates and reports the overall fuels flight mobility status.
- Monitors mobility personnel compliance in maintaining updated documents, individual mobility equipment, and immunizations.
- Schedules personnel requiring special qualifications training.
- Ensures assigned UTC's meet requirements IAW Attachment 14.
- Selects personnel with at least two years retainability to attend ATHRS, ABFDS and FARRP.
- Assigns the appropriate special experience identifier (SEI) IAW Attachment 7.

9.8 Additional FARRP Requirements

9.8.1. Lead MAJCOM will:
- Certify the program and qualify the initial cadre including trainers of personnel at each new FARRP location prior to their initial commitment date.

9.8.2. Duties of the FMT:
- Conducts initial interviews with all prospective FARRP operators.
- Ensures adequate personnel are designated and trained to meet 24 hour mission readiness requirements.
- Ensures all FARRP policies from HQ AFSOC/LGRS are implemented.
- Appoints all certifiers in writing.
- Provides covered storage area for FARRP servicing equipment and secured storage for FARRP personnel equipment.

9.8.3 Duties of the FARRP Team Chief/Manager:

- Monitors FARRP personnel and equipment to ensure all training is accomplished, qualifications are maintained, and readiness status meets mission operation requirements.
- Briefs FARRP personnel on all policies issued by HQ AFSOC/LGRS.
- Provides management with a monthly status update.
- Provides the FCC with a roster of primary and alternate team members on recall standby.
- Coordinates with the flying squadron's planners/schedulers to ensure personnel availability for training and mission requirements.
- Submits the FARRP budget to HQ AFSOC/LGRSWF by 1 Apr. each year.
- Submits the FARRP inventory and the FARRP training reports to HQ AFSOC/LGRSWF semi-annually (Apr/Oct).

9.8.4 Currency requirements:

- Perform one FARRP mission every six months, from aircraft to aircraft with engines running, under blacked out conditions using Night Vision Goggles (NVGs).

9.8.5. Certifier Requirements:

- Meet all requirements in para 9.6.3 and be current, qualified, and appointed by the FMFC in writing.

Chapter 10

SUPPORTING FUELS OPERATIONS

Section A—Unit Training

10.1. Fuels Training Objectives:

- Provide qualified personnel to perform their assigned duties.
- Maintain a balance of skills within the activity.

10.2. Duties of the Fuels Training Supervisor. The FMFC appoints a training supervisor to:

- Administer the upgrade training program according to AFI 36-2201, *Developing Military Training Programs*.
- Designate qualified personnel as trainers.
- Develop training programs for all assigned equipment and systems.
- Coordinate the fuels management training program with squadron training.
- Maintain Weighted Airman Promotion System (WAPS) study material.
- Schedule generator operation, driver's training, and fire extinguisher training.
- Prepare a personnel qualification roster to the FCC.
- Assign the appropriate SEI to personnel. (See Attachment 7).
- Train tank custodians according to AFI 23-204, *Organizational Fuel Tanks.*

10.2.1. Reviewing Training Documentation.

- Review all training records semi-annually.

10.2.2. Fire Prevention Training. Develop a lesson plan to include:

- Fire reporting procedures.
- Facility evacuation.
- Vehicle evacuation from fuel servicing areas
- Fuel spill response.
- Emergency shutdown procedures.
- Hazard elimination.

10.3. Developing a Rotational Training Program.

10.3.1. The FMT:

- Implements a base-level rotational training program IAW core task identified in the Career Field Education and Training Plan (CFETP).
- Does not need a formal rotational program if the location has fewer than 15 military personnel and those with 12 to 15 month tour lengths.

10.3.2. Use the following guidelines and the CFETP as a template:

- 5-Skill Level: Experience in mobile distribution, bulk storage, service station, and some laboratory functions.
- 7-Skill Level: Familiar with the areas at the 5-Skill Level point plus hydrant distribution, preventive maintenance, FCC, accounting and cryogenics.

- Post 7-Skill Level: Familiar with all fuels functions, including administration, cryogenics production, quality control and inspection, and FMSE systems.

10.4. Publication Familiarization. Fuels supervisors must familiarize personnel with applicable publications and advise personnel of significant changes.

Section B—Materiel Control

10.5. Duties of the Fuels Materiel Control Supervisor.

- Coordinates supply and equipment transactions with base supply.
- Buys needed parts, tools, and equipment.
- Establishes bench stock and special levels authorizations.
- Monitors equipment authorizations and custodian receipt listings.
- Provides supply and equipment budget forecasts through the FMT to the squadron commander.

GEORGE T. BABBITT, Lt General, USAF
DCS/Logistics

GLOSSARY OF ABBREVIATIONS, ACRONYMS, AND TERMS

Abbreviations and Acronyms

ABFDS−Aerial Bulk Fuel Delivery System
ABO−Aviator's Breathing Oxygen
ACE−Alternate Capability Equipment for the ABFDS
ADDS−Aerial Delivery Dispensing System
AFCAM−Aviation Fuels Capability Assessment Model
AFOSH−Air Force Occupational Safety and Health Standards
AS −Allowance Source
ASTM−American Society for Testing and Materials
ATHRS−Air Transportable Hydrant Refueling System
BCE−Base Civil Engineer
BFMO−Base Fuels Management Office
CFMS−Combat Fuels Management System
DFO−Defense Fuel Office
DFR−Defense Fuel Region
DFSC−Defense Fuel Supply Center
DGSC−Defense General Supply Center
DRMO−Defense Reutilization and Marketing Office
ECAMP−Environmental Compliance Assessment and Management Program
EMO−Equipment Management Office
EWO−Emergency War Order
FAM CART −Forward Area Manifold Cart
FAMS−Fuels Automated Management System
FARRP−Forward Area Refueling and Rearming Point
FAS−Fuels Automated System
FCC−Fuels Control Center
FMFC−Fuels Management Flight Commander
FMSE−Fuels Mobility Support Equipment
FMT−Fuels Management Team
FOA−Field Operating Agency
FOI−Fuels Operating Instruction
IMP−Inventory Management Plan.
IPRB−Installation Planning Review Board
JPO−Joint Petroleum Office
JQS−Job Qualification Standard
LOX−Liquid Oxygen
LIN−Liquid Nitrogen
LPG−Liquefied Petroleum Gas
MIL-SPEC−Military Specification
OVS−Overboard Vent System
PML−Precision Measuring Laboratory
POL−Petroleum, Oils, and Lubricants
PSO−Peacetime Stockage Objective
PWRMR−Prepositioned War Reserve Materiel Requirement
PWRMS−Prepositioned War Reserve Materiel Stock
SA-ALC/SF−San Antonio Air Logistics Center, Directorate of Aerospace Fuels
SAPO−Sub-Area Petroleum Office
SEI−Special Experience Identifier
UGT−Upgrade Training
WCDO−War Consumable Distribution Objective

Terms

Area Fuels Laboratory—Provides testing services to bases on samples of petroleum and related products. Conducts specification tests to determine the quality of petroleum products under procurement and in the Air Force supply system.

Air Force Stock Fund—A stock fund is a system for holding in suspense the cost of consumable materials from the time of acquisition until the items are issued for use. The fuels division is one of seven within the Air Force stock fund.

Bulk Petroleum Products—Liquid petroleum products transported by various means and stored in tanks or containers having an individual fill capacity greater than 250 liters.

Charter Carriers—Air carriers under agreement to any department of the US Government. This agreement may be an oral or written contract and the rates will equal those on file with the Civil Aeronautics Board. Charter carriers may or may not be under operational control of the department executing the agreement.

Civil Aircraft—All non-Government aircraft (domestic and foreign) other than contract and charter carrier aircraft.

Contaminated Product—An off-specification product resulting from mixing with another product or products of different type and grade or by introduction of foreign matter such as rust, dirt, or water.

Contract Carriers—Air carriers under contract to any department of the US Government. They are under operational control of the department concerned at rates lower than published rates on file with the Civil Aeronautics Board.

Cryogenics—The science of refrigeration, with reference to methods for producing very low temperatures.

Defueling—Types of defueling are:

- Hot Defueling--Single point defueling of aircraft with one engine running.
- Cold Defueling--Conventional defueling of aircraft which do not have an engine running.

Determinable Losses—The actual loss of inventory, the cause of which is determinable; such as contamination, fire, downgrading of products, etc.

FP—Air Force Petroleum Supply Accounts. Activities are accountable for items capitalized in the fuels division Air Force stock fund. For example, ground products in the ground fuels management category, missile propellants, oxidizers, and pressurants in the missile fuels management categories (see AFMAN 23-110, volume I, part three). Control office is SA-ALC/SFRL, Kelly AFB TX 78241.

Ground Products—Those refined petroleum products normally intended for use in administrative, combat, and tactical vehicles; material handling equipment; special purpose vehicles; and stationary power and heating equipment.

Hazardous Waste—Any petroleum product when mixed with a hazardous substance and designated as waste. Hazardous waste must be stored, transported, and disposed of in accordance with federal, state, local, or host nation environmental laws.

Hydrant—That portion of a pump system which can provide 600 to 1200 GPM (minus line and friction loss) through an outlet into an aircraft.

Mogas—Refers to all grades of automotive gasoline.

Organizational Fuel Tank—Any tank, other than integral vehicle tanks or hand-carried safety cans, not under exclusive fuels management control.

Refueling—Types of refueling are:

- Hot Refueling--Single point pressure refueling of aircraft with one or more engines idling.
- Cold Refueling--Conventional refueling of aircraft which do not have an engine operating. (The term may be used to differentiate from hot refueling.)

Responsible Officer—Appointed by the squadron commander. This person must be proficient in fuels management and is responsible for the care and safeguarding of the petroleum stocks. This person also ensures accountable records are maintained and required reports are generated.

Sample—A small part of a quantity of product representative of the entire quantity, used for inspection or to determine the quality of the product.

Unit Manpower Document (UMD) —A computer product which lists manpower authorizations. It reflects how many people are authorized to accomplish the mission. MAJCOMs use this document to show allocated resources, and as the baseline for portraying the impact of application of new or reapplication of existing manpower standards. The UMD contains

- The position number.
- AFSC.
- Functional account code (work center).
- Authorized grade.
- Number of authorizations.
- A summary of authorizations for officers, enlisted, and civilians assigned to each unit by work centers.

Unit Personnel Management Roster (UPMR) —A computer product which identifies people assigned to the unit, by section or functional account code (FAC). The UPMR identifies assignments and indicates the month and year of departures.

Unit Type Code (UTC) —Identify a specific capability of personnel and/or equipment to be deployed in support of various operations.

War and Mobilization Plan (WMP) —The Air Force takes the Joint Strategic Capabilities Plan (JSCP), translates this into Air Force operational and logistics planning guidance, and publishes this in five volumes known collectively as the War and Mobilization Plan (WMP). The Wartime Aircraft Activity (WAA) listing is published as WMP, Volume 4. The WAA lists line entries for each JCS-approved OPLAN.

RADIO TRANSMISSION CODES

Use the following modified 10-series radio transmission code list. Add other call signs to meet any local requirements.

Code	Meaning
10-1	Receiving poorly.
10-2	Receiving well.
10-3	Radio Check.
10-4	Acknowledge, will comply.
10-5	Standby.
10-6	Repeat, reception poor.
10-7	Out of service location.
10-8	In service location.
10-9	What is location?
10-10	Return to FCC.
10-11	Departing parking area.
10-12	How many gallons out of unit?
10-13	Proceed to fill stand.
10-14	Entering fill stand area.
10-15	Leaving fill stand with full unit.
10-16	Request another unit-location.
10-17	Request supervisor at-location.
10-18	Request standby fire truck at location.
10-19	Fuel spill, request assistance.
10-20	Entering the parking area.
10-21	Unit requires maintenance (discrepancy).
10-22	Valves open; ready to receive.
10-23	Valves open; ready to start transfer.
10-24	Start pumping.
10-25	Stop pumping.
10-26	Pumps stopped.
10-27	Transfer complete; valves closed.
10-28	Servicing canceled.
10-31	Distinguished visitor in area.
10-36	Correct time.
10-97	Arrived at scene.
10-98	Finished with last assignment.

EDUCATION AND TRAINING OPPORTUNITIES

A3.1. Logistics Education Advancement Program (LEAP). LEAP provides selected NCOs with on-the-job experience and training in special fuels logistics areas. Four LEAP positions exist: two at Kelly AFB, Texas on an 18-month rotational basis between SA-ALC/SFR and SFTH; one at DFO-FD, Fort Dix, New Jersey; and one at the Air Staff, Pentagon, Washington DC. Each position is a 3-year assignment.

A3.1.1. HQ USAF/LGSP chairs a LEAP selection panel composed of 2F000 personnel. The AFPC fuels (2F0X0) functional representative serves as an advisor.

A3.1.2. HQ USAF/LGSP tasks HQ AFPC/DPAAD1 to advertise the projected vacancy and solicit volunteers meeting the following mandatory prerequisites:

- Hold a grade of E6 or E7.
- Completed 8 - 14 years total active federal military service as of 1 October in the year considered for assignment.
- Possess a control 2F071 AFSC.
- Completed required PME.
- Have at least a “Secret” security clearance.
- Eligible for reassignment.

A3.1.3. Volunteers submit a package to their respective MAJCOM consisting of:

- A one-page nomination letter from the unit commander or equivalent.
- A copy of the last five EPRs.
- A copy of the “Career Brief” obtained through the host CBPO.
- A prioritized assignment preference list.

A3.1.4. MAJCOMs consolidate and forward nominee packages to HQ AFPC/DPAAD1, Randolph AFB, TX. The AFMPC fuels representative verifies all prerequisite data and forwards nomination packages to HQ USAF/LGSP.

A3.2. Petroleum Logistics Management Course (PLMC).

A3.2.1. Sheppard Technical Training Center.

- Holds a formal fuels career broadening course, J3AZR2F0X1-001, for grades Master Sergeant through Chief Master Sergeant and LEAP selectees.
- Provides fuels operation training in quality surveillance, war planning, and logistics management areas.

A3.2.2. MAJCOMs/LGSF.

- Select PLMC attendees.
- Maintain wavier authority for Technical Sergeants filling the fuels superintendent position or other Staff positions.

A3.3. Fuels Management Professional Enhancement Program (PEP). The Office of the Secretary of Defense Deputy Under Secretary of Defense for Logistics (DUSD(L)) provides a hands-on managerial development program in fuels management for mid-level fuels officers (Senior Captains through Lieutenant Colonel).

- HQ AFPC/DPASL advertises the PEP program and forwards names to HQ USAF/LGSP.
- HQ USAF/LGSP provides nominees to DUSD(L) for final selection.
- Assignment will rotate with DUSD(L) and HQ USAF/LGSP.

A3.4. Air Force Institute of Technology (AFIT). See eligibility criteria in AFI 36-2110, *Assignments*. Eligible officers obtain a Master of Science Degree in Petroleum Engineering.

A3.5. Utilization and Training Workshop (U&TW). HQ USAF/LGSP chairs the annual U&TW IAW AFMAN 36-2245. U&TW attendees include, the Fuels Training Planning Team (FTPT) consisting of a fuels representative from every MAJCOM, HQ SSG, and the Fuels Career Training Manager.

- Determines training requirements and AF Specialty responsibilities.
- Ensures training quality and curriculum currency.
- Reviews all course control documents and associated curriculum materials.
- Provides technical expertise to update course materials.
- Identifies and plans for training equipment.

A3.5.1. MAJCOMs are OPR for the specific courses.

- HQ ACC/LGSF- Fuels Specialist. Cryotainer Production/Maintenance, and Support Equipment.
- HQ AMC/LGSF - Petroleum Logistics Management.
- SA-ALC/SFTH - Fuels Quality Control
- SSG/LGSF - Fuels Accounting.
- HQ AETC/LGSF - 7-Level Course.
- HQ PACAF/LGSF - Fuels Management Officer.

TECHNICAL PUBLICATION LIST

This listing provides technical order (T.O.) and publication references applicable to base fuels operations:

T.O. 0-1-01	Numerical Index, Alphabetical Index, and Cross References Table Technical Order
T.O. 0-1-02	General Technical Orders
T.O. 00-5-1	AF Technical Order System
T.O. 00-5-2	Technical Order Distribution System
T.O. 00-20-1	Preventive Maintenance Program
T.O. 00-20-7	Inspection System, Documentation, and Status Reporting for Support Equipment and Training
T.O. 00-20-14	AF Meteorology and Calibration Program
T.O. 00-20B-5	Vehicle and Base Support Equipment Inspection and Records Administration
T.O. 00-25-4	Depot Level Maintenance - Aerospace Vehicles and Training Equipment
T.O. 00-25-172	Ground Servicing of Aircraft and Static Grounding and Bonding
T.O. 00-25-246	Selection, Inspection, Service, and Control of Motor Vehicle and Aerospace Ground Equipment Tires
T.O. 00-35D-54	USAF Materiel Deficiency Reporting System
T.O. 33D2-10-34-1	Cryogenic Sampler
T.O. 33D2-10-53-11	Cryogenic Sampler
T.O. 33D2-10-56-1	Cryogenic Sampler
T.O. 33D2-10-60-1	Cryogenic Sampler
T.O. 35-1-3	Corrosion Prevention, Painting and Marking USAF Support Equipment
T.O. 35E-13-82-1	Operation, Service and Repair Instructions, Trailer-Mounted Pump Assembly A/M 32R-22
T.O. 36-1	Vehicles, General
T.O. 36-1-3	Painting, Marking, and Lighting Requirements for USAF Vehicles
T.O. 36A9-3	Fuel Servicing Semi-Trailers
T.O. 36A9-12	Chemical Handling Semi-Trailers
T.O. 36A11-10	Fueling Servicing Trailers
T.O. 36A12-13	Fuel and Oil Servicing Trucks
T.O. 36A12-23-3	Water Trucks (A2)
T.O. 36G1	Oxygen or Nitrogen Generating Plants
T.O. 36G2-3-1	Air Purging Unit Type GSU-62/M
T.O. 37-1-1	Operation, Inspection, and Maintenance of Permanently Installed Fuel Storage and Dispensing Systems
T.O. 37A-1-101	Fuel and Oil Handling Equipment
T.O. 37A2-2	Hose Carts
T.O. 37A3-2	Collapsible Containers
T.O. 37A6-2	Nozzles
T.O. 37A7-2	Powered Pumps
T.O. 37A8-2	Gasoline Water Separators
T.O. 37A9-3	Hydrant Fuel Storage Distributing and Dispensing Systems
T.O. 37A9-7-2-1	Operation Maintenance and Illustrated Parts Breakdown, Forward Area Manifold Cart.
T.O. 37A11	Refueling Units, Fuels and Oil Handling Equipment
T.O. 37C2	Propellant and Storage Handling Equipment
T.O. 37C2-8-1-127	Liquid Oxygen/Nitrogen Overboard Vent System
T.O. 37C11-3-1	Vacuum Gauge
T.O. 40W1-2-1	Demineralizer
T.O. 40W4-8-1	Water Injection Servicing and Demineralizer Unit
T.O. 42B-1	Fuels, Lubricants, Oxygen, and Gases
T.O. 42B-1-1	Quality Control of Fuels and Lubricants
T.O. 42B1-1-14	Fuels for USAF Aircraft

T.O. 42B-1-16	Receipt, Storage, and Handling of Liquid Propellants
T.O. 42B-1-23	Disposal of Waste Liquid Fuels and Other Petroleum Products
T.O. 42B2	Oils
T.O. 42B5	Gas Storage and Servicing Cylinders
T.O. 42B6	Liquid Oxygen
T.O. 42B7	High Energy Liquid Propellants
T.O. 42C	Chemicals
T.O. 42C-1-16	De mineralized Water and Water-Alcohol Mixtures for Aircraft Engines
40 CFR 280	Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks
AS 006	Organizational and Administrative Equipment
AS 012	Vehicles
AS 016	Special Purpose Clothing and Personal Equipment
AS 158	Bare Base Support System
AS 460	Quality Control Laboratories
AS 488	Fuel Storage and Gas Generating Equipment/Storage Tanks and Maintenance Support Equipment
AS 660	Communications Equipment Allowances Non-Programmed Communications (Non-PCSP) Requirements
AS 929	Housekeeping Set (WRM Program)

COLOR CODES FOR CRYOGENICS PLANTS

Item	Color	Secondary Warning Color
PLANTS:		
Liquid oxygen discharge port	Green #14260	
Liquid nitrogen discharge port	Brown #20219	
Safety valve	Do not paint	
FACILITIES		
Electric conduit	Gray #16187	Red
Electrical control center interior doors	Orange #12197	
Electrical control center and remote switch boxes	Gray #16187	Red
Caution areas and safety shields	Yellow and black (Cross hatched)	
Floor	Do not paint	
Building interior	Light green	

*Seal floors in the production area with epoxy sealant. Do not paint liquid oxygen storage and cylinder charging floors.

NOTES:

1. Mark all gauges (pressure, liquid level, and flow) in the following manner:
   a. Green - normal operating range
   b. Yellow - caution range
   c. Red - danger/over pressure range
2. Paint the building interior a light color to provide a bright working area. Convert to a light color when repainting is normally required.

CRYOGENIC EQUIPMENT AND FACILITY REQUIREMENTS

A6.1. Equipment.

A6.1.1. Purge Unit. The GSU-62/M Air Purging Unit is a portable electric motor-driven blower and heater unit used to purge storage containers with heated air.

Record purge unit inspections, maintenance, and conditions on AFT.O. Form 244, *Industrial/Support Equipment Record*. One purge unit per FP account storing cryogenics is authorized.

A6.1.2. Vacuum Gauge. The vacuum gauge is a hand-held battery powered unit. Use this unit to monitor, in microns, the vacuum reading of the annular space of a cryotainer. Use the gauge in conjunction with a thermocoupler for an accurate reading.

A6.1.3. Vacuum Pump. The PMU-4/E Vacuum Pump is a portable, explosion-proof electric-driven, free-air pumping unit which draws and maintains the insulating vacuum in storage containers. Record vacuum pump inspection, maintenance, and conditions on AFTO Form 244. One vacuum pump per FP account is authorized.

A6.1.4. Cryogenics Samplers. Sample cylinders are portable containers used to draw and transport cryogenics product samples. Samplers do not require periodic maintenance record documentation, but they must be hydrostatically tested every five years. Guidance for requisitioning replacement cylinders is outlined in T.O. 33D2-10-60-1.

A6.1.5. Portable Dual Efficiency Meter. The Portable Efficiency Meter checks the storage container vacuum by measuring the product boil-off rate.

A6.2. Facility Requirements. The BFMO provides the following to ensure a safe, functional, and secure facility:

A6.2.1. Protective fencing to enclose storage and generation facilities. Designate cryogenics facilities as controlled areas according to AFI 31-209, *Air Force Resource Protection Program*.

A6.2.2. Adequate electrical power for production operation and auxiliary equipment. Adequate indoor and outdoor lighting to include receiving and servicing areas. Electrical power should be 3 phase, 220 volts, 50/60 cycle.

A6.2.3. A concrete foundation with non petroleum based sealant between joints for storage tanks, receiving, and servicing area and servicing cart parking areas. Completely fill the joints with the sealer to prevent the accumulation of dirt.

A6.2.4. A paved road to and from the facility, capable of supporting commercial cryogenics delivery vehicles and maintenance vehicles, as well as a drive-through capability to permit receipt and issue without requiring the vehicle to back up.

A6.2.5. A telephone with a bell capable of being heard above the noise of the operating production, and within the tank storage area.

A6.2.6. Adequate grounding points for storage tanks and servicing units. Permanently ground fixed production plants.

A6.2.7. Provide blowdown/condensate traps for each generating plant to comply with the base ecology program and environmental protection agency requirements.

A6.2.8. In cold climate locations ensure snow is removed.

A6.2.9. Do not document general cryogenic system area inspection items such as fencing, drip pans, lighting, safety equipment etc., on the AFTO Form 244. Each BFMO prepares a locally developed inspection checklist applicable to their LOX/LIN facilities.

FUELS SPECIAL EXPERIENCE IDENTIFIER (SEI) MATRIX

Figure 7.1. Fuels Special Experience Identifier (SEI) Matrix

PREREQUISITES

SEI	035	036	037	039	040	369	387
	FARRP	CRYO Maintenance	CRYO Production	LAB	ACCT	ABFDS	ATHRS
Course		J3AZR2F051 -005	J3AZR2F051 -006	J3AZR2F051 -001	J3ZR2F051 -002	ACC2F0X1 -001	ACC2F0X1 -000
PDS		DDG	DCG	BYP	T3N	QXB	VP3
AFSC	2F0X1	2F0X1	2F051	2F051	2F051	2F051/71	2F051
Experience	6 Months	3 Months	3 months	6 months	6 months	N/A	N/A
Clearance	SECRET	SECRET	SECRET	SECRET	SECRET	SECRET	SECRET
AWARD ACTION							
FMO Recommends	X	X	X	X	X	X	X
Commander Approves	X	X	X	X	X	X	X

REFRESHER TRAINING

Refresher training timetables are required by personnel who are filling UTC requirements listed in their unit's DOC Statement. Appropriate refresher training is determined by the FMT unless specified by other training methods as they become available.

SEI 035 - Every year from initial training or last mission flight (Phase1).
SEI 037 - Every two years from initial training or last assignment in a cryogenic production plant.
SEI 039 - Every year from initial training or last assignment in a fuels laboratory.
SEI 040 - Every year from initial training or last assignment in fuels accounting.
SEI 369 - Every three years from initial training or last mission flight.
SEI 387 - Every two years from initial training (use the ACC video).

NOTE: FARRP SEI, 3-level personnel having completed all 5-level upgrade requirements may be qualified.

PERSONAL EQUIPMENT FOR FARRP AND ABFDS SPECIALISTS

Equipment	U/I	FARRP	ABFDS
Flight Suit	ea	4	2
Flying Gloves	pr	3	2
Flight Jacket (summer)	ea	1	N/A
Flight Jacket (winter)	ea	1	1
Boots, Flyers, all leather	pr	2	1
Patches			
MAJCOM	ea	N/A	3
Unit	ea	6	3
AFSOC	ea	6	N/A
American Flag	ea	6	3
Gortex Jacket	ea	1	1
Gortex Pants	ea	1	1
Flyers Thermal Top	ea	2	2
Flyers Thermal Bottom	ea	2	2
Shorts, BDU, Black	pr	2	N/A
*Garment Bag, Flyers	ea	1	1
*Helmet (HGU-26P or 55P)	ea	1	1
*Oxygen Mask	ea	1	1
*CRU-60 Adapter	ea	1	1
*Helmet Bag	ea	1	1
Sunglasses	pr	1	1
Dust goggles	pr	1	1
*Web Belt w/Suspenders	ea	1	1
*Canteen w/cover and cup	ea	1	1
*Flak Vest	ea	1	N/A
*Sleeping Bag	ea	1	N/A
*Sleeping Bag Pad	ea	1	N/A
Poncho Liner, Camouflaged	ea	1	N/A
*Butt Pack	ea	1	N/A
*First Aid Kit Individual	ea	1	N/A
*Survival Knife (M-9)	ea	1	N/A
*Multiplier Tool	ea	1	1
*Code 4 Junior Flashlight	ea	1	N/A
*Mini Mag Light Holder	ea	1	N/A
*Mag Flashlight, (3 cell)	ea	1	N/A
*Waterproof clothing bag	ea	2	1
*Snaplink	ea	2	1
*Backpack, Large (two piece)	ea	1	N/A
*Knee Pads	pr	1	N/A
*Last Resort Belt	ea	1	N/A
*Wrist Watch	ea	1	1
*Pager (national)	ea	1	N/A

NOTES:

1. Items marked with an asterisk (*) are required to be turned in upon PCS movement or termination of specialty requirements. **Exception:** Helmet liners may be retained by the individual.
2. ABFDS personnel do not require equipment issue to attend the formal training course. Equipment will only be issued to those filling an ABFDS mobility/UTC position.
3. The life support section provides an inspection location for required helmets and masks. ABFDS operators sign out the required helmet and mask from the life support section as needed. ABFDS operators return the helmet and mask to the life support section on completion of mission requirements.

CLIPBOARD COLOR CODE SCHEME

PRODUCT	COLOR	STRIPES
JP4	Yellow	
JP5	Yellow	Black Checks
JP7	Yellow	Red
JP8	Yellow	Blue
JP8 + 100	Yellow	Green
JPTS	Yellow	Black
Diesel, Low Sulfur	Brown	
Diesel, High Sulfur (Includes DF8)	Brown	Blue
Automotive Gasoline		
Leaded	Red	
Unleaded	Red	Green
Demineralized Water	White	
UDMH	Red	Yellow
Nitrogen Tetroxide	Brown	White
Environmental Fluid	White	Blue
Liquid Oxygen	Green	Yellow
Liquid Nitrogen	Gray	Yellow
Waste Fuel	Red w/yellow outer border	Black

ENVIRONMENTAL GUIDELINES

A10.1. Spill Prevention and Containment. The FMFC:

- Ensures all BFMO controlled fuel tanks are equipped with high-level alarms and/or automatic high-level shut-off valves.
- Establishes safe fill levels below the high-level alarm level.
- Provides secondary containment that is impermeable to petroleum products at all loading and unloading facilities and for all above ground tanks.
- Does not discharge drainage water containing residual petroleum products or hazardous chemicals that have leached out of the petroleum product.
- Coordinates with the base environmental manager to sample and properly dispose of fuel tank dike drainage and tank bottom water.
- Develops local operating procedures for collection, segregation, storage, and disposition of waste and reusable bulk petroleum products according to AFI 23-502, *Recoverable and Unusable Liquid Petroleum Products*.
- Ensures fuels personnel understand responsibilities as outlined in AFI 32-4002, *Hazardous Material Emergency Planning and Response Compliance*, and the base's hazardous material emergency planning and response plan (HAZMAT plan) which addresses
- Notifies the base environmental manager of any changes in fuels operations that may require an amendment to the HAZMAT plan.
- Ensures adequate spill prevention and clean-up materials are readily available.

A10.2. Waste Fuel Management. The FMFC:

- Designates interim storage and final disposition locations and procedures for off-specification bulk products and product-water mixtures under fuels management control.
- Does not use installed hydrants, storage sumps, and slop tanks to collect or store waste fuels.
- Obtains written MAJCOM approval to use stock listed vehicles and trailers for the collection and transport of waste fuels or oils.
- Clearly marks and completely isolates the tanks and equipment used for waste products from active product storage and equipment to prevent contamination.
- Ensures the direct supervision when waste materials are delivered to waste product tankage in the fuels area by the generating activity.
- Properly train fuels personnel who handle hazardous waste.

A10.3. Leak Detection. The FMFC:

- Assures that any chemicals or additives injected into USAF fuels are approved by the agencies listed in TO 42B-1-1, Appendix A-5, para a.
- Ensures fuels personnel are present for all inoculations of leak detection chemicals in BFMO controlled bulk storage tanks.
- Prepares and submits AFTO Form 149 to their respective MAJCOM with an info copy to SA-ALC/SFTT within five work days after tank inoculation.
- Trains organizational tank custodians on their responsibilities outlined in TO 42B-1-1 Appendix A-5 paragraph c.(2).

MANAGEMENT ENGINEERING PROGRAM

A11.1. Key Management Engineering Program (MEP) Organizations.

A11.1.1. The MEP provides analytical assistance for functional (fuels) managers to improve productivity and determine standardized manpower requirements. HQ USAF/PER is the office of primary responsibility for the Air Force Management Engineering Program.

A11.1.2. The Air Force Management Engineering Agency (AFMEA) and MAJCOM Directors of Manpower and Organization administer the MEP through a dual concept of operation.

- AFMEA provides analytical services to Air Force functional managers for core processes which are common to each command.
- MAJCOMs, through the Manpower Office (MO), provides analytical services to functional managers within respective MAJCOMs.

A11.2. Location of Manpower Agencies.

- HQ USAF/PE , as part of the Air Staff, is located in the Pentagon.
- AFMEA is a Field Operating Agency (FOA), headquartered at Randolph, AFB TX.
- Manpower Office (MO) is located on a host or main operating base.

A11.3. MEP Duties Assigned to Air Force Manpower Engineering Agency (AFMEA).

- Provides analytical services (Process Improvement Program, Continuos Process Improvement through Enterprise Reengineering), Benchmarking, Costing, Facilitation, Integrated Resource Management, Organization, Performance Measures, and Standards and Variances that apply to more than one MAJCOM or for organizations with no management engineering capability.
- Annually reviews and processes all changes to AFMSs received from MAJCOMs, FOAs, and DRUs and provides results of annual review to commands.
- Provides technical guidance and support to functional OPRs, MAJCOMs, FOAs, and DRUs.
- Publishes all manpower standards.
- Serves as point of contact for all Air Force management engineering procedural matters.
- Develops and implements training on the latest MEP technologies. Implements the MEP as directed by Air Staff.

A11.4. Duties of the Installation Manpower Office (MO). The Manpower Office manages manpower for Commercial Activities (CA) which includes fuels management, aircraft maintenance, civil engineering, etc. The local MO:

- Provides analytical services (Continuous Process Improvement, Benchmarking, Costing, Facilitation, Integrated Resource Management, Organization, Performance Measures, and Standards and Variances that apply to wing functions (fuels).
- Advises wing commanders and functional (fuels) managers on effective resource management.
- Provides management engineering services in support of inputs to MAJCOM and Air Force process management studies.
- Assists base functional managers with Fast Payback Capital Investment Program (FASCAP), Productivity Investment Fund (PIF) proposals, and Component Sponsored Investment Program (CSIP).
- Validates workload exceptions submitted by commanders and functional managers.
- Assists commanders and functional managers in the development of performance work statements (PWS).

A11.5. How To Develop Manpower Standards.

A11.5.1. Manpower standards development process determines a function's process resource requirements and establishes a workload/manpower requirement This process provides the basis for projecting both manpower requirements and distribution of Air Force manpower authorizations. Standards development uses process management methodology and analytical techniques.

A11.5.2. The BFMO applies approved manpower standards annually:

- Collect the work count for the workload factor for a 6 to 12 month period.
- Apply the average to the standard.

A11.6. Variances to Manpower Standards. To increase the applicability of manpower standards and still be responsive to unique requirements at each location, the MEP recognizes work variations due to mission, technology, or environment. These variations are identified as either plus or minus variances to the basic standard. The fuels community identifies the requirements for exceptions to the local Manpower Office. HQ USAF/LGSP recommends final approval or disapproval for fuels manpower determinant.

TYPES OF SUPPLY SUPPORT

A12.1. Special Level Spares. The BFMO requests authorizations for special level category of supply support according to AFMAN 23-110.

A12.2. Initial Spare Support List (ISSL) Items. Base Supply maintains these items for issue as long as ISSL retention is authorized.

A12.3. Serviceable Spare Parts. The BFMO identifies material retained by the cryogenics production function with one of the following categories of support:

- Items requisitioned, received, and retained for programmed work as scheduled in applicable maintenance records. Group and identify for specific functions.
- A bench stock. The cryogenics production function establishes a bench stock. Properly store and protect all LOX cleaned items against possible damage and foreign matter contamination.
- Maintenance and inspection work residue items**.** Identify with DD Form 1574, *Serviceable Tag-Materiel*, attached to the item. Display the form prominently on work residue.
- Depot Spare Parts. MAJCOMs authorized depot spare parts for 5-ton and 1.5-ton plants will designate a central location and establish procedures for controlling these items.

AIR FORCE CRYOGENICS TECHNICAL ASSISTANCE

A13.1 Air Force Cryogenics Technical Assistance Team. The Air Force cryogenics technical assistance team (CTAT) is established within Air Combat Command, 4 SUPS/LGSFM, Seymour Johnson AFB, NC. Its purpose is to evaluate and correct deficiencies related to cryogenics production equipment, facilities, cryotainers, and related support equipment that bases and MAJCOMs cannot solve. It provides highly qualified specialists with the combination of skills and experience necessary to investigate cryogenics problems and recommend solutions. The team may be augmented with other personnel having specialized expertise as required. Similarly, the team is available to augment MAJCOM's during Quality Air Force Assessments to provide cryogenics expertise.

A13.2 MAJCOM Responsibility. Each MAJCOM that operates and maintains facilities that produce, store and dispense cryogenics products will direct and carry out required quality control and handling programs. In doing so, the MAJCOM will:

- Ask the cryogenics technical assistance team for assistance whenever there is a problem beyond the capabilities of the command to solve.
- Give team members access to all cryogenics personnel, facilities, and equipment they need to investigate/evaluate the problem fully.
- Give team members local facilities, transportation, and miscellaneous support it needs.
- Provide the procedures, training data, records, and personnel the team requests.
- Act on team recommendations if the command can approve them. If team recommendations require approval beyond the MAJCOM's authority, forward them with appropriate comments to HQ USAF/LGSP or other appropriate activity.

A13.3 Request for Assistance:

- If any unit (worldwide) identifies a problem related to cryogenics production or handling that it cannot control or solve, it should seek assistance from the MAJCOM first.
- When the MAJCOM gets a request for help, they will identify the cause of the problem and decide whether the MAJCOM can correct it. If the MAJCOM cannot identify or correct the problem, the Command Fuels Management office will: Submit a formal request for assistance to HQ ACC Langley AFB VA//LGSSF// with an information copy to 4 SUPS Seymour Johnson AFB NC//LGSFM//. The initial request can be made via telephone, and then confirmed by message. Direct telecon between individual bases and the CTAT at Seymour Johnson AFB is authorized to discuss cryogenic operational problems and possible solutions prior to requesting a formal evaluation.
- HQ ACC/LGSSF will take action to ensure MAJCOM requests for assistance are met.
- Funding for an on-site visit will be provided by the requesting base. A fund cite for travel expenses and per diem must be provided in the formal message requesting assistance.

A13.4 Team Response to Request for Cryogenics Technical Assistance. When the team receives a request for assistance, It will:

- Conduct an on-site technical evaluation, which includes an assessment of cryogenics production equipment, associated facilities, and related equipment.
- Determine and recommend the measures to take to eliminate or prevent the problem from recurring.
- At the completion of the evaluation/assessment, the team will out brief the local logistics group commander and chief of supply with the initial findings and provide a written report to the MAJCOM and HQ ACC/LGSSF within 30 days.
- The team will follow up with the base/MAJCOM to see how effectively the on-site assessment solved the problem.

A13.5 Cryogenics Residency Requirements.

A13.5.1 MAJCOM responsibilities:

- Determine operator training requirements for their units.
- MAJCOMs will submit personnel training requirements to support DOC/UTC taskings to HQ ACC/LGSSF. As a minimum: One (1) 2F071 and one (1) 2F051 with SEI 037, and three (3) 2F051s with PDS code XJF will be required to support UTC JFDJB.

A13.5.2 HQ ACC Responsibilities: HQ ACC has been designated as lead command for training on the air transportable one-ton cryogenics production plant. HQ ACC responsibilities include the following:

- Designate storage base, prescribe command reporting, establish training curriculum and administer a management program.
- Develop, in conjunction with 4 FW/LGSFM, all one - ton production plant training materials and lesson plans.
- Identify annual funding requirements and submit requests through HQ ACC/LGX.
- Calculate cryogenics personnel and equipment requirements to support current and future planning guidance.

- Approve changes to course curriculum, class quotas, or training schedules.

A13.5.3 Cryogenics training facilities staff/functions

- Instruct courses to meet requirements in AFI 23-201.
- Maintain student handbooks, instruction lesson plans, and a complete set of applicable technical orders.
- Conduct student training to include: classroom study, hands-on inspections, preventive maintenance, and operational functional checks.
- Maintain benchstock for commonly used items to support production plants.
- Prepare training materials for applicable courses.
- Provide recurring inspections and maintenance on assigned equipment.

FUELS PERSONNEL UNIT TYPE CODES

AFSC	SEI	JFAXQ	JFAXR	JFAXS	JFAXT	JFAXV	JFAXW
2F031		5	4		6		
2F051	387	4	3		3	6	
2F051	039			1			
2F051	040			1			
2F051		3	3				
2F071	387	2	1			2	
2F071		1	1		1		
2F071	039						1
2F091							1
TOTAL		15	12	2	10	8	2

AFSC	SEI	JFDEA	JFDEZ	JFDGB	JFDGC	JFDJB
2F051	369			2	4	
2F051	037					1
2F051		3				3
2F071	037					1
2F071	369				1	
23S4	LLI		1			
TOTAL		3	1	2	5	5

(USAFE) UTC

AFSC	JFDJA
2F051	3
2F071	2
TOTAL	5

(AFSOC) UTC

AFSC	JFARP
2F0X1	3
TOTAL	3

NOTE: For JFAXW a 2F000 may be substituted for a 2F091. The 2F071 must be a MSgt.